NATIONAL CAR BUILDER

VOLUME X
NUMBER 1

DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

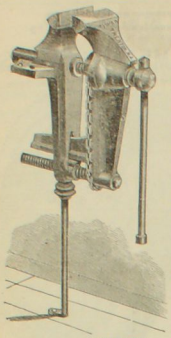
$1.00 PER ANNUM
SINGLE NUMBERS TEN CENTS.

NEWARK:
Morse Build Nassau St.

JANUARY, 1884.

Entered at the Post Office at New York N. Y., as Mail Matter of the Second Class.

CHICAGO:
144 N. Clark Street.



Our NO. 6 VISE opens 10 inches, with 8-inch Jaws; has solid forged screws 1¾ inch diameter, with 36-inch lever. We make 5 smaller sizes of same pattern. Special discounts to R. R. Companies and Car Companies on application.

THE
FISHER DOUBLE-SCREW VISE.
FULLY WARRANTED.

Stronger than any other Leg Vise,
AND ALWAYS PARALLEL.

The Best Vise for R. R. Machine Shops and Car Builders, and for all heavy work.

Accurate and Durable.

MADE ONLY BY
THE EAGLE ANVIL WORKS,
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W. BAILEY LANG,
Sole Agent in the United States and Canadas for the
LOWMOOR
IRON COMPANY.

Bar Iron of great strength and uniform quality
Plate Iron unequaled for Fire Boxes.
Tyres, Axles, Chain Rivets, Angle and **T Iron** and **Forgings** of all descriptions.
STAY-BOLT IRON.
A full assortment of Bar Iron in store.
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Steel Rail Benders, Track Drills, Track Jacks, Track Wrenches, Car Movers,
RAIL ROAD SUPPLIES
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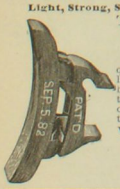
"Standard" Brake Shoe & Head.

Light, Strong, Simple, Durable.



The Best and CHEAPEST IN USE.

Both Head and Shoe quickly adjustible, the latter also easily reversible when required. All the corresponding parts of each thoroughly interchangeable.

Write for circular and Prices.
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Wrecking and Construction Car.

All the main features, such as leveling car, turn table, self adjustable step for vertical post, twenty feet hoist, working over embankments, swinging load—car body or more—direct on to freight car, hinged jacks, direct grapples to rail, and other important features, all perfected and patented by Jewett, foreman of a wrecking gang for many years.

For further information apply to the builder,
HARRISON LORING,
Boston, Mass.

NOTICE.—To build an efficient wrecking car, many of the main features of this car would have to be incorporated into it which would be an infringement of my patents. Such cars are being built by the undersigned (having special tools for the work) at very reasonable prices, and no charge made for the patent rights, which would have to be paid for by the user if made by an unauthorized person.
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MANUFACTURES
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SOLE MANUFACTURERS OF
HARD & FLEXIBLE VULCANIZED FIBRE.
Flexible Vulcanized Fibre Dust Guards and Oil-Box Covers,
being absolutely unaffected by oil or heat, are far more durable and efficient than Leather, and much cheaper.
Office and Works; Wilmington, Del.

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MOSCOW, 1872, Great Gold Medal.
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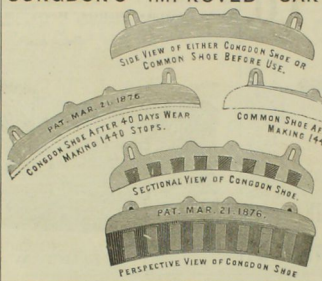

This shoe, while being more effective, in that greater uniformity of friction can be obtained when applied to the wheels of a train in motion without stopping the revolution of any till the train is at rest, exceeds in life, or the durability of the Shoe itself, that of the cast iron shoe by over seventy-five per cent.

Its durability, together with cheapness and simplicity of construction, recommend it in preference to any other in use

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THE CONGDON BRAKE SHOE CO.,
142 DEARBORN ST., Chicago,
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GEO. McDOUGALL,
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GELATINIZED FIBRE FLEXIBLE DUST-GUARDS.

Superior to Leather or "Vulcanized Fibre."

Keep the Oil in the Car-Boxes and Sand and Dust out of Them

They are not affected by oil, grease or petroleum; do not cut the axles, as grit does not adhere to them; keep their shape well and will outwear several leather ones. Cut to order of any desired thickness or pattern. Send drawing or sample for estimate. This material is **absolutely free from grit, and will not become brittle and break.**

NOW IN USE ON MANY LEADING RAILROADS, GIVING GENERAL SATISFACTION.

Master Car-Builders desiring to cut their own washers can be furnished with FLEXIBLE SHEET GOODS of any desired thickness; being uniform in quality and thickness, can be cut without waste.

BE SURE TO SEND FOR SAMPLES AND PRICES.

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Manganese Bronze and Brass Castings,

STRONGEST AND BEST IN THE MARKET.

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Babbitt's Anti-Friction METAL,
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WRENCHES,
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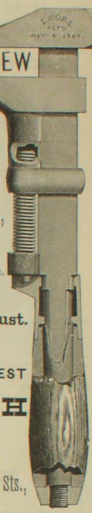

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BAR JAW AND SHANK,
FERRULE MADE WITH DOUBLE BEARINGS,
Iron Tube Fitted to Shank, held rigidly in position by handle and nut.
No Back Thrust.
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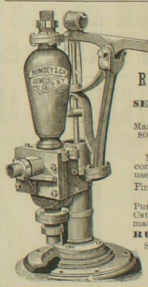

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More than 50 railway companies have them in use. Also,
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Ask for Rumsey's Pumps, and address for Catalogue and full information.
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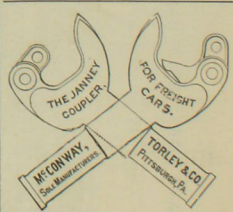

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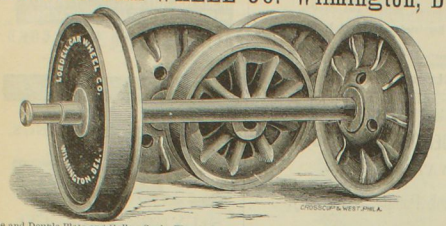

Single and Double Plate and Hollow Spoke Wheels for Steam Roads. Also, Solid and Open Plate Wheels for Street Roads. Wheels with Turned Threads, under the Patent of "W. W. Lobdell."

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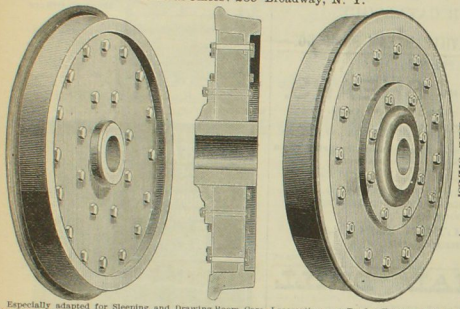

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Especially adapted for Sleeping and Drawing-Room Cars, Locomotive and Tender Trucks. Steel Tire with Annular Web—Strongest, Most Durable, and Most Economical Wheel in use. Works at Hudson, N. Y., and at Pullman (near Chicago), Ill.

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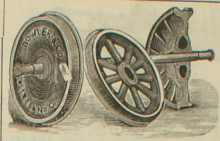
Capacity 350 Wheels per day. Wheels made by improved process. Far more durable than those made in the ordinary way.



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Car Wheels of All Kinds and Sizes

WITH OR WITHOUT AXLES.

CHILLED-FACED RAILROAD FROGS.

Street Railroad Turnouts.

ROLLING MILL AND MACHINERY CASTINGS.

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BOWLER & CO.

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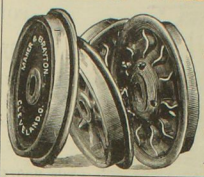

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Works: Cor. Carter and Collins Streets, Cleveland, O.

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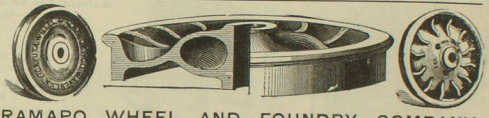

RAMAPO WHEEL AND FOUNDRY COMPANY,

MANUFACTURERS OF

Chilled Wheels for Drawing-Room and Sleeping Coaches, Locomotives, Tenders, Passenger and Freight Cars.

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RAMAPO, ROCKLAND COUNTY, N. Y.

CHILLED CAR WHEEL GRINDING COMPANY.

H. M. YERRINGTON, President. Patented in United States and Canada. A. C. ELLIS, Vice-President. G. F. FORD, Secretary and Treasurer.

The GOWAN CHILLED CAR WHEEL GRINDING MACHINE, which we now introduce, is no hasty device. It is the result of four and one-half years' experience, and during that time has received a most thorough test, with satisfactory results.

Railroad officials, upon reflection, will admit it is more essential to have a machine to true up Chilled Car Wheels than a Tire Lathe for turning locomotive tires, for this reason: four or more driving wheel tires are required for one engine; a greater number of Car Wheels compose a train; hence the necessity of this invention.

The great hardness of the chilled tread has hitherto rendered the operation of turning them impracticable, owing to the great expense, which made it cheaper to frequently replace the worn wheels with new ones. To obviate these objections and reduce the cost of this process, we furnish a machine capable of making a perfect wheel at small expense.

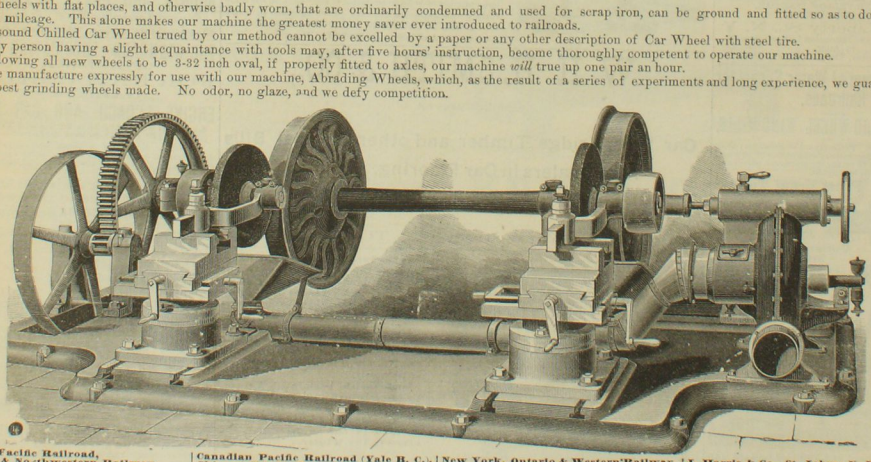
Wheels with flat places, and otherwise badly worn, that are ordinarily condemned and used for scrap iron, can be ground and fitted so as to double their original mileage. This alone makes our machine the greatest money saver ever introduced to railroads.

A sound Chilled Car Wheel trued by our method cannot be excelled by a paper or any other description of Car Wheel with steel tire.

Any person having a slight acquaintance with tools may, after five hours' instruction, become thoroughly competent to operate our machine.

Allowing all new wheels to be 3-32 inch oval, if properly fitted to axles, our machine *will* true up one pair an hour.

We manufacture expressly for use with our machine, Abrading Wheels, which, as the result of a series of experiments and long experience, we guarantee to be the best grinding wheels made. No odor, no glaze, and we defy competition.



Central Pacific Railroad,
Chicago & Northwestern Railway,
Chicago, Rock Island & Pacific Railway,
Virginia & Truckee Railroad,
Pennsylvania Railroad,
Denver & Rio Grande Railway,
Chicago, Milwaukee & St. Paul Railroad.

Canadian Pacific Railroad (Yale B. C.),
Chicago City R. R., Cable Road,
New York & New England Railroad,
Union Pac. Ry., Denver & S. Park Div.),
South Pacific Coast Railroad,
Nevada County Narrow Gauge Railroad,
Chicago City Railway (South Division),

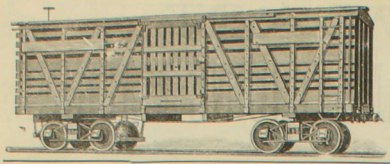
New York, Ontario & Western Railway,
Lehigh Valley Railroad,
Pullman Palace Car Company,
Allegheny Valley Railroad,
Chicago City Railway (West Division),
Carson & Colorado Railroad,
Lake Tahoe Narrow Gauge Railroad,

J. Harris & Co., St. Johns, N. B.
Baltimore & Ohio Railroad,
New York, Lake Erie & Western,
New Brunswick Wheel Foundry, St Johns, N. B.
New York Central R. R., Harlem Div.
New York, New Haven & Hartford R. R.

We are prepared to sell machines outright, or to furnish them on royalty for each pair of wheels trued.

Address CHILLED CAR WHEEL GRINDING COMPANY, CARSON, NEVADA.

JOHN H. HAPGOOD, General Agent, Grand Pacific Hotel, Chicago, Ill.



LA FAYETTE CAR WORKS,

LAFAYETTE, IND.

Freight and Caboose Cars of all kinds. Hand and Push Cars.

Warehouse Trucks and Baggage Barrows. Car Wheels and Castings.

B. F. MASTEN, Prest. C. E. CORE, Supt.

MANUFACTURERS OF

CARS,

Car Wheels, Truck Wheels and Tender Wheels,

Hammered Car and Locomotive Axles and General Forgings.

Car Wheels Fitted to Axles.

Car Castings, Bridge Castings and Car Brasses.

Mining Cars, Mining Wheels, Etc.

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E. ENSIGN, Secretary and Treasurer, Huntington, W. Va.

The Ensign Manufacturing Company

(CAR WORKS, FOUNDRIES AND STEAM FORGE).

DAILY CAPACITY, - - - - - - - - - - - 15 Box Cars, 250 Car Wheels, 80 Axles.

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CHATTANOOGA, TENN.,

MANUFACTURERS OF

FREIGHT CARS, CAR WHEELS AND CASTINGS OF ALL KINDS.

BRADLEY CAR WORKS, WORCESTER, MASS.

ESTABLISHED 1833.

MANUFACTURERS OF EVERY DESCRIPTION OF

RAILWAY CARS.

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MAHOGANY All Veneers and Cabinet Woods. FRENCH BURL VENE..S A Specialty.

SAW MILLS AND OFFICE, Foot 10th & 11th Streets, East River, NEW YORK.

LITCHFIELD CAR AND MACHINE COMPANY,

LITCHFIELD, ILLINOIS.

Manufacturers of all kinds of Passenger and Freight Equipment, both Wide and Narrow Gauge.

CAR WHEELS A SPECIALTY IN THE MACHINERY DEPARTMENT.

Especial attention is given to furnishing Hoisting Engines, Pit Cars, Dumps, etc., etc., for Coal Mines, as well as building Stationary Engines and Boilers, and General Brass and Sheet-Iron Work.

KNOXVILLE CAR WHEEL CO.,

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ENGINE TRUCKS AND TENDERS,

USING STRICTLY

COLD BLAST CHARCOAL IRON,

Made at their Celebrated Carter Co. Furnaces.

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Freight, Coal, Dump, and Mine Cars. Capacity six cars per day.

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SOUTHERN CAR WORKS,

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Box, Flat, Gondola, Ore, Mining, Etc.

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ERIE CAR WORKS (LIMITED).

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Capacity 16 Cars Per Day.

FREIGHT CARS OF BEST MATERIAL, AND CONSTRUCTION A SPECIALTY

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STATIONARY ENGINES AND BOILERS,

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HARRISBURG CAR MANUFACTURING CO.

MANUFACTURE

PASSENGER MAIL, BAGGAGE, BOX, GONDOLA, COAL

AND ALL OTHER KINDS OF

RAILROAD CARS;

Railroad Car Wheels and Castings, Bridge and Rolling Mill Castings, Bridge Rods, Bolts and

RAILROAD FORGINGS.

JOHN STEPHENSON CO., Limited,

STREET CARS

And Omnibuses.

47 East Twenty-Seventh St, N. Y.

JOYCE'S PATENT LEVER JACK

Compound Lever and Screw Jacks.

Most Simple, Durable and Powerful Jack Made.

SEND FOR PRICE LIST.

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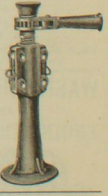
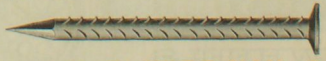
Sole Agents,

311 Broadway, New York.



S. A. CHARLES, President. M. E. BRINTNALL, Secretary.



CINCINNATI WIRE NAIL CO.,

MANUFACTURERS OF

PLAIN AND BARBED WIRE NAILS

FOR CAR BUILDING.

CINCINNATI, - - - - - - OHIO.

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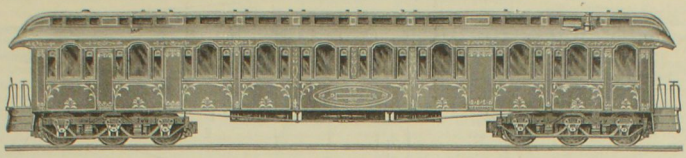
THE NATIONAL CAR-BUILDER.



DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XV. NUMBER 1. | JANUARY, 1884. | SINGLE NUMBERS, TEN CENTS, $1.00 PER ANNUM.

Miscellaneous Items.

THE Patten Car Works, at Bath, Me., which have been idle for some years, will soon be started up by a company composed of New York parties and the Messrs. Patten.

PRESIDENT CORBIN, of the Long Island Railroad Co., sent out a turkey-distribution train on Sunday before Christmas, laden with fat gobblers for the employés on the line. The expenditure therefor is said to have been $3,500.

THE Cincinnati, New Orleans & Texas Pacific road has determined to change its gauge to 4 ft. 8½ in., and all engines are now being made with that change in view. It is supposed that the change will be made by Spring and will occupy four days.

THE Pullman Palace Car Company have concluded a contract with the Mexican Central Railway Company, 1,200 miles, and it is expected that on the first day of May the Pullman cars will be in full operation between El Paso and the City of Mexico.

CAR SHOPS of considerable extent are to be erected at Winnipeg, Manitoba, for the Canadian Pacific road. The main building will be 75 × 200 feet, and two stories in height; the machine shop 66 × 80 feet. The establishment will employ 400 hands.

GENERAL MANAGER FINNEY, of the Wisconsin Central road, gave the employés of the company a general Christmas holiday, and had passes issued to all of them who could be spared from their duties, giving them free transportation on all trains for three consecutive days.

THE Security Car Trust Company has been organized at Erie, Pa. Instead of renting cars to railroads, as is the usual custom, it will sell them for 10 per cent. cash and the balance monthly. Six per cent. bonds, representing the unpaid portion, will be issued, and will be the first lien on the cars.

GEO. R. MENEELY & CO., manufacturers of Hopkins' patent self-fitting journal bearings for railway cars and engines, have recently enlarged the melting plant of their foundry at West Troy, N. Y., to a capacity of four tons per day. They have also a well-appointed foundry at Atlanta, Ga., from whence they supply their patrons in the Southern States.

A NEW car roof, invented by W. H. Paige, of Cleveland, employs asphalt paper instead of iron, thus saving 240 pounds of dead weight per car. Cheapness and durability are claimed. A company has been organized for its manufacture. Mr. Paige has also recently invented a machine for drilling bolt holes in car wheels, by which the work is greatly accelerated.

THE Gendron Iron Wheel Co., Toledo, O., which organized three years ago with a capital stock of $30,000, has increased its stock to $100,000, and is at present removing to its new building, which gives ample manufacturing facilities, being constructed of brick, with four floors, and containing 40,000 square feet of working room. The company now employs 50 men.

AT a meeting of the Board of Directors of the Woodruff Sleeping and Parlor Coach Co., held at Pittsburgh, Dec. 18, Job H. Jackson, of Wilmington, Del., was elected President of the Company, vice Frank Rahm, resigned, and Wm. G. Johnston was elected Vice-President in place of James Irwin. Mr. Jackson has been for many years President of the Jackson & Sharp Co.

THE Buckeye Car & Manufacturing Co., Columbus, O., is building 100 box and 100 coal cars, each 36 feet long, for the Cincinnati, Washington & Baltimore road; also, a number of sample Van Wormer dump-cars for the United States Car Co., of Boston, and other parties. These cars have been much improved, simplified and strengthened in their construction, and are now about as near perfection as it is possible to make them.

ARRANGEMENTS are being made by the New York Central & Hudson River Railroad Co. for connecting all its ticket offices by telephone with the central office at the Grand Central Depot. As fast as the telephone company can make its connections they are being put in. By the adoption of this measure passengers will be able to secure drawing-room or sleeping-car accommodations directly at any office of the company throughout the city.

AT Clapham Junction, where the great railroad systems of London connect, the rails lie together like the wires of a piano. Sixteen hundred trains a day run over them. There is no shrieking of whistles or clanging of bells. They keep their signals for their officials, and outsiders must expose themselves at their own risks. A tunnel-way for passengers connects the whole, so that no one is allowed to cross the rails except the employés, who grow foolhardy, and now and then come to grief. On the average, one man is killed every six weeks.

MR. JAMES K. TAYLOR, who for the past 13 years has held the position of Master Mechanic on the Old Colony Railroad, and whose resignation of his position is much regretted by his many friends, was recently presented, on behalf of the employés in the repair shops at South Boston, with a gold-headed ebony cane, a beautiful French clock, an easy chair, a pair of Parisian bisque figures, and an ice pitcher with two gold-lined goblets. The presentation was made by Foreman Kolseth, and after the usual formalities the recipient received three rousing cheers from the assembled donors.

THE passenger equipment of the Maine Central road is noteworthy on account of its adaptation to the prevailing low temperature in winter. The cars are short and the windows are of moderate size. These conditions make it less difficult to heat them, the diminished area of glass surface making quite a difference in this respect, especially when the mercury falls below zero, as is frequently the case. The style of the inside finish is light and cheerful, and the numerous junctions where cars have to be detached and sent off on branches or upon other lines, render it necessary to have more of them in a train, and hence short cars are an advantage.

THE Brownell & Wight Car Co., St. Louis, Mo., have just shipped to St. Paul, Minn., 12 street cars that are said to be the finest ever built in this country. They are finished on the inside with solid mahogany, beveled French-plate mirrors, etc., making them as handsome and elegant as good taste could suggest. These, together with previous shipments, make nearly 100 cars shipped by the company to the St. Paul street lines within the last two years. The company have in addition cars under way for Cleveland and Dayton, O.; Ottumwa, Ia.; Atchison and Emporia, Kan.; Lampasas and Fort Worth, Tex.; Atlanta, Ga.; Denver, Col., and for other places.

THE Pennsylvania Railroad Co. has been experimenting recently with a patent which is to do away with the bell-cord on passenger trains. The experiments are being conducted on the Pittsburgh Division, and the patent is the production of the Westinghouse Air Brake Company. It consists of a communication by air pressure with a small whistle in the cab of the engineer. The hose through which the air is conducted will be independent of that communicating with the brakes. The connection between the passenger car and the air tube is from the rear of the car, near the closet, where there is a button, which is pressed by the conductor when he desires to signal the engineer.

A LONDON company has patented a device for lighting railway coaches by means of a battery carried beneath them. It is said that the chemicals used will cost only one-eighth as much as the appliances hitherto used to develop the same electrical energy. On a trial trip a Pullman dining car on the Northern road was lighted brilliantly by six Swan incandescent lamps, the supply being furnished by a battery of 12 cells, the length of the battery being 4 feet, and the breadth and depth each 8 inches. The excellence and steadiness of the light were highly commended. It was perfectly easy to read small type while the car was at full speed. After other preliminary trials, several railway companies have made propositions for the adoption of the system.

AN exchange says: The Owasco River Railroad, running into Auburn, N. Y., is to be equipped with electric gates for crossings. The gates will be set over the tracks, so that their tendency, through the influence of a spring at the hinge side, will be to fly open, but they will be held shut by electric catches. As the train approaches the gateway from either direction, the first set of wheels, coming in contact with a spring set by the rail at some distance from the gate, closes a circuit and releases the gate so that it flies open. Then the pressure of the wheels upon a double-lever arrangement by the side of the track keeps the levers down until the last truck has passed through the gateway, when the lever will rise again and the gate is automatically closed behind the train.

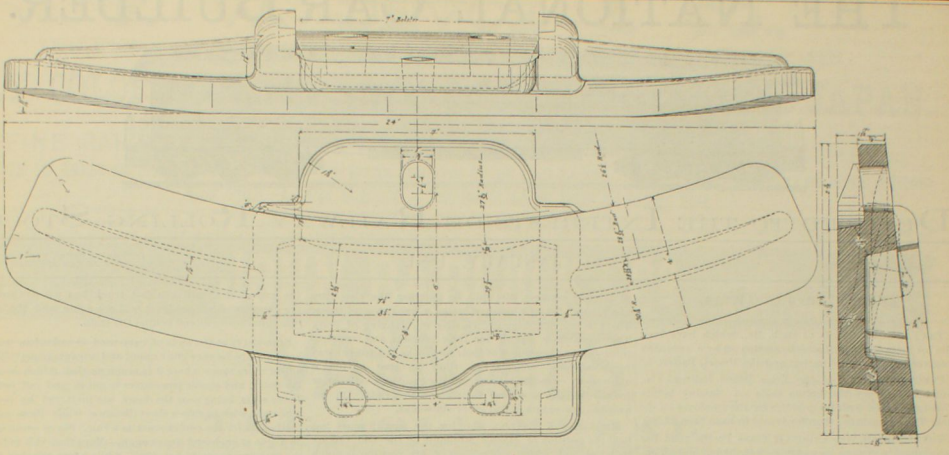
SIDE SEATS at the ends of cars used in suburban traffic are found to be very convenient and advantageous. They afford more space where it is much needed, which is near the doors, and enable passengers to get in and out better. These seats, being near the doors, are preferred by people who only wish to ride a short distance, while those going further prefer the center seats as a rule. Six or seven seats on a side at each end are enough. More than this reduces the carrying capacity too much, while a less number contracts the space. Experience has shown that arm divisions for so small a number of side seats are not necessary, and still less is it necessary to have arm-chairs, as is sometimes the case. Such chairs may be luxurious, but they increase the cost and occupy more space than can be spared.

THE passengers on the outgoing evening trains of the Pennsylvania Railroad from Jersey City have of late been subjected to an annoyance, which, if it cannot be got rid of altogether, should at least be abated. We refer to the procession of newspaper hucksters, which begins its march through the trains as soon as passengers are admitted, each individual huckster vieing with the others in the vigor with which he can keep up a prolonged yell announcing the catalogue of his wares. There is no relief until the trains are fairly out of the station, for as soon as one of the demons, after working a car, makes his exit at the rear door, another with expanded lungs is impatiently awaiting his turn at the opposite door. These fellows need toning down, and it should be the duty of some of the road or station officials to see that it is done.

MR. MARDEN, at the Charlestown shops of the Fitchburg road, is engaged in turning out a lot of 12 passenger coaches. They are 56 feet long and have one saloon each; the building will go on continuously, and at the present rate the number will amount to 18 in June. He is also just finishing four new caboose cars; these are of the four-wheel pattern, with a raised observation seat and rather more than the usual number of conveniences. One is already on the road, the other three being at present in the shop; 50 box freight cars are also under way, and he is building drop side-board coal cars for local service right along. These cars are of somewhat peculiar pattern, and are especially adapted to service on the road. They are convenient for unloading into wagons and for return freight and can take lumber very conveniently.

THE locomotive works of the Grand Trunk Railway, at Montreal, cover an area of about ten acres. Of the men employed 1,115 are in the locomotive shops and 618 in the car shops, so that the total number at present is 1,733. The locomotive shops do the entire work of the line from Quebec and Island Pond to Sarnia, with the exception of the Great Western Division. This includes the building as well as the repair of locomotives, for the Grand Trunk have bought no locomotives since the time of the change of gauge, some ten years ago. The works are capable of turning out 50 new locomotives every year, and a repaired engine every day. Last year 42 new locomotives were built; this year the number of new locomotives turned out will be 30. The works comprise some 15 different buildings, including the new foundry, just completed, which will be capable of turning out 3500 tons of castings every year. All the workshops are illuminated by arc electric lights.

THE loading of freight cars with regard mainly to the bulk, irrespective of weight, that can be got into the cubic space of a box car, or piled up on a flat car, subjects the springs in many cases to a pressure beyond their capacity, and, if they break, the blame is laid on the spring makers. This is manifestly unfair, unless the specifications call for springs with a tested capacity so great as to afford an ample margin for overloading. This, however, is not apt to be specified, because the greater the capacity of the spring the more and better must be the material that goes into it, and this makes it cost more. Springs may be warranted to carry a maximum weight which they rarely or never get, and consequently they do not wear out prematurely. It must be remembered that the "capacity" of freight cars, which is now in a transition state from small to large, necessarily involves the capacity of the springs under them; and, furthermore, the spring-makers must



FRICTION PLATE FOR 7-INCH IRON BOLSTER—CENTRAL PACIFIC RAILROAD.

bear in mind that the factory testing-machine does not always handle a spring precisely as it is handled on the cars in rough train service.

A SUPERINTENDENT of one of the New England roads, in a conversation on the subject of freight car loads, expressed himself substantially as follows: It will answer very well to brand all cars with "Capacity 40,000 pounds," and let them go at that. Such loads are not so frequently carried as to be a very serious matter, and when they *are* carried it is without much regard to the original or actual capacity of the car. From the manager's standpoint there is no great harm in this as things are now. But in regard to the freight car load of the future—that is another matter. If we are bent upon having 50,000 or 60,000 pounds, we certainly must have a heavier and stronger cast-iron wheel. Although we do not carry heavy loads in all our cars, the idea of having some cars for heavy work and some for light work is not a good one. It is, on the contrary, vastly better to have them all capable of carrying a regular maximum load, say of 40,000 pounds, and be able to take such loads when and where they are offered, than to be deadheading cars all along the line to pick them up here and there. There are some cars running with the "40,000" brand that weigh less than 20,000 pounds, and some old-fashioned 10-ton box cars that weigh 22,000 pounds.

THE UNION SWITCH & SIGNAL CO., of Pittsburgh, whose automatic interlocking switch and signal apparatus is so rapidly superseding the old clumsy methods, have recently introduced their system at the crossing of the Old Colony and Fitchburg roads, at Fitchburg, and at the Walpole crossing of the Old Colony and New England. The apparatus at Fitchburg is an improvement upon that at Walpole, and is so positive in its action that by no possibility can one train run into another at the crossing, even if the switch-tenders and train hands are all asleep. The working of the system at Fitchburg has been witnessed by the Railroad Commissioners of Massachusetts and a large number of prominent railroad officials with unqualified approval. Another apparatus of the same description as that at Fitchburg is nearing completion at Concord Junction; and the adoption of the system in its latest development is quite likely to become general upon New England roads, and particularly in the neighborhood of Boston, where crossings and junctions are the most numerous. The system has been in successful operation for some time at the New York terminus of the New York Central, and New York, New Haven & Hartford roads, where a complicated, unwieldly and dangerous network of tracks and crossings has been reduced to order and system, with an immense saving of labor, reduction of force and diminished liability to accident.

A WRITER in the Painters' Magazine, in the course of some comments on an article in the November CAR-BUILDER, in which light-colored woods in car-finishing were objected to because of their tendency to grow dark, makes the following suggestions, which may be of practical value in counteracting such tendency:

"The principal point made is that wood darkens with age, and to such an extent as that the 'car soon has a soiled and dingy look, which makes it prematurely old.' In this connection there are some facts touching the methods of filling and finishing woods that are not fully appreciated. Undoubtedly wood will darken with age, but if it is properly filled and well finished, it will not, if kept clean, become soiled or assume a dingy appearance. If this latter takes place I am inclined to think it is caused by unskillful treatment in the finish. Work is oftentimes saturated with oil before filling, than which no greater mistake can be made. Oil will necessarily, by reason of the changes which take place in the process of drying, give work sooner or later a dull and dingy appearance. So, too, many of the fillers used, composed of starch and other changeable substances, have the same. The delicate lights and shades of the wood are sooner or later effectually obliterated by such treatment. Nor will the most careful varnish finish over such oiling and filling long delay the result. On the other hand, if properly grounded, the work will hold its translucency until the life of the finishing varnish shall fail. This will depend, as in the case of all other work, upon the quality of the varnish and the exposure to which it is subjected."

American Society of Mechanical Engineers.

At the New York meeting of the Society in November, a paper was read on the subject of cranes. This paper and the discussion which followed, in connection with the visit of the members to the works of the Yale & Towne Manufacturing Co., at Stamford, Conn., was an event of some practical interest to car-builders. Cranes were shown at the works of this company of various sizes, some of them so small as barely to be able to lift a barrel of flour, and others sufficiently powerful to handle a locomotive. The adaptation of these machines, according to their capacities, to the lifting of light and heavy weights is suggestive that they might be used to great advantage in car shops, or rather to a greater extent than they are now used. The Weston cranes, made by this company, are considered almost indispensable in many shops on account of their convenience in the handling of heavy material of every kind.

The excursion of the members over the West Shore road was a very enjoyable one, and gave them an opportunity of seeing a first-class trunk line road, made to order and finished, as it were, without undergoing the usual process of growth. The name of "Nickel-Plate," appropriated by another recently constructed road, suggested the idea to some of the more enthusiastic excursionists that the West Shore deserved to be called "24-Carat Gold." The high elevation of a considerable portion of the track above the river gives commanding views of the scenery on the opposite side, as well of the Catskill mountain range, which looms up on the Western side.

At Kingston the guests found a number of locomotives arranged in line for their inspection, and a half-hour or so was spent in examining them. The English style of smoke-stacks, plain black domes and sand-boxes, and the general absence of the showy features characteristic of American engines, elicited more or less criticism, favorable and otherwise. With respect to essential details nothing was heard but unstinted praise, as they seemed to embody the very best practice in this country and in Europe. Boilers and grates, and also the stub-ends of connecting rods, were carefully examined and highly approved. The passenger car equipment is excellent. The coaches and drawing-room cars have 42-inch paper wheels, also the tender trucks. The engine trucks also have paper wheels, but of smaller size.

The terminal arrangements at Weehawken have been frequently described, but the excursionists hardly expected to see such a capacious and commodious passenger depot, and such beautiful and tastefully-finished waiting rooms.

Car-Wheel Iron.

Even at the present day foreign mechanics are prone to underestimate the strength of American cast iron to resist the ordinary work of machinery, and are very skeptical in regard to the ability of the finer kinds to resist severe concussions. Many of them will, doubtless, look incredulous when told of the bending ¾ of an inch out of line of a cast-iron guide 13 or 14 feet in length, which the technical papers described some time since in connection with a somewhat peculiar steamboat accident that attracted a good deal of attention both at home and abroad. Such iron runs considerably above 33,000 pounds tensile strength, and shows hammer marks very much in the same way as a piece of wrought iron. Half a dozen years ago a car-wheel was exhibited in England made of Salisbury iron, and an effort was made to have these wheels introduced for use on English roads. The wheel had been sent over some years previously, and of course everybody was skeptical in regard to its ability to stand service. It was decided to test the thing, and the wheel was laid on the ground flange downward. Strikers, one with a 28-pound and the other with a 32-pound sledge, were called from the blacksmith shop and set to work to break a piece out of the wheel. They worked in pairs, relieving each other from time to time. The blows were all directed just inside the tread upon a single plate. One of the witnesses of the affair told us afterward that they expected to demolish the wheel at the sixth or seventh blow, but no crack was seen until 61 blows had been struck. The succeeding blows started some fresh cracks, but it was not until the 395th blow had been struck that a triangular piece was broken out. This was about 9 inches long on the tread, and ran to a point about 9 inches from the circumference. This was an ordinary wheel having a ¾-inch chill. The wheel was then turned over, and after a pretty severe attack on the core-holes in the double plate another piece was broken out. We presume that, with careful jockeying and a little heating, a piece of this iron might be treated as we have seen similar metal handled, and a cubical piece flattened out into a plate, say half its original thickness. We have an impression, which has been given by a number of different tests as well as careful inspection, that many of the steel castings now in the market are only the best gun metal made with care, and annealed afterward so as to prevent excessive hardness in small masses.

Aimed at the Brakeman.

No, my son, that gentleman in the azure clothing and gilt buttons is not a naval officer. He is a gentleman of leisure, of no profession, and without and above occupation. He spends his time on the cars, because he can best there serve his fellows. He is always doing some good act. At one moment he is locking the stove door to keep the fire from going out; at another he is turning down the lights, to prevent the passengers from reading and thereby injuring their eyesight, and at the same time furnishing to all that rich perfume which the partial consumption of kerosene oil always affords; and anon he is playfully mystifying his fellow-mortals by calling out the names of stations in language unintelligible and unknown; but his principal and pleasantest labor is to assist young ladies off the cars. It is estimated by statisticians that the average brakeman squeezes the arms of 4,798,341 young ladies per annum. It is very pleasant to be a brakeman, but only the sons of millionaires can afford to aspire to the position.—*Boston Transcript.*

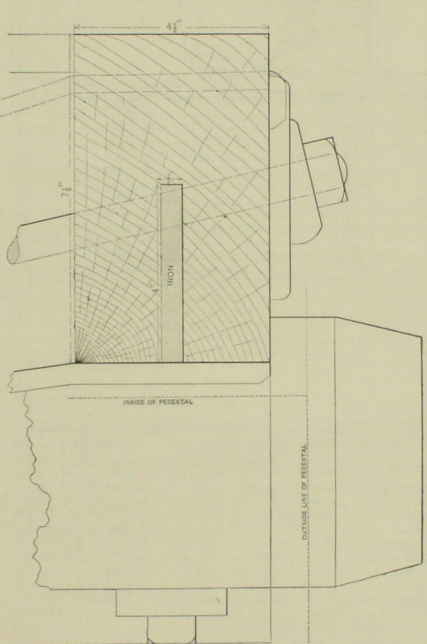
Strengthening Wood Framing With Iron.

The engraving illustrates a method of strengthening the wooden wheel-piece of a passenger car truck, which has many points of advantage that are worth considering. We are indebted to Mr. Manier, of the Jones Car Manufacturing Company, of Schenectady, for our details. We believe this construction is similar to that which has been employed by the New York Central Railroad for the same purpose. The cut shows the method used on four-wheeled trucks having an eight-foot spread. As the iron extends only between the equalizing spring seats there is considerable economy of material, and the iron is only used where it is needed for strength and where the vertical strain is the greatest. The sketch is a section, looking toward the end of the truck, and shows the position of the braces and also in dotted lines the location of the pedestal. The iron is ¾ an inch thick by 4 inches deep and is let into the body of the stick, filling a notch or groove cut to receive it. The iron is thoroughly painted and then driven into place with a sledge. With the exception of its lower edge it is entirely imbedded in the wood and is held in such a way that the shrinkage does not tend to slacken the hold of the wood upon it. The slot is cut by a saw which finishes it completely, so that there is nothing to do beyond driving the iron into place. This method of construction, it is thought by those who are familiar with it, is much better than the ordinary practice of strengthening a wheel-piece by plating it with iron on both sides, in which case, of course, the wood acts simply as a distance-piece, but in a somewhat imperfect way, because its shrinkage has a constant tendency to impair the solidity of the truck. To secure the same amount of stiffness, the single piece of iron is considerably less in weight than would be necessary for an outside application, is firmly held in place and is entirely secured against corrosion. Extending as it does, only from pedestal to pedestal, it is used entirely for giving vertical strength to the stick, and hence is really needed only in the spaces between the equalizing springs. Beyond these springs the wheel-piece merely has to keep the pedestals in position and hold the truck square. No vertical strains whatever can be put upon it. So far we have heard no unfavorable criticism upon this method, and we do not at present see any objections to it; indeed, it appears to be applicable to a wide range of usage.

Such devices as this are especially interesting as showing both the tendency of the best car-builders toward the use of iron in all places where it can be profitably employed in car construction, and also the way in which iron is likely to be most frequently employed in future. In car-building at present iron is used with a freedom which makes it probable that the day of the iron car frame is not far distant. In saying this we do not for a moment imagine that an iron passenger car will be produced in the immediate future. The complete iron car, which some of our enthusiastic friends are so fond of describing, and of the merits of which they are never tired of talking, we do not think will be seen in this generation. We do think, however, that as experience is gained in the use of iron for strengthening wooden constructions and in the use of iron members in car framing, iron will be gradually introduced into car-building, and the quantity of wood reduced in the important members, until the strength of the floor frames, truck-frame transoms, etc., is furnished by the iron and not by the wood. From this we would not have it inferred that we look for a revolution in car-building. We do not expect the wooden car of to-day to be replaced by the iron car of to-morrow. In the very nature of things this is impossible. The car-builder, however, will go on strengthening his wooden constructions and replacing wooden members with iron, until his frame is, as we have said, a frame of iron with a superstructure of wood.

Taking the wheel-piece as an example of a stick to be strengthened, we find that by carrying the use of iron a little further than is indicated by the sketch, it would be easy to make the iron do all the work and leave the wood of the wheel-piece merely as a convenience for making the attachments. If, instead of plain bar iron, a piece of T-iron is used, the whole strength of the wheel-piece, both vertical and in a horizontal direction, may be obtained from the iron itself. There are many merchant shapes which can be filled up with blocking pieces and a compound wheel-piece formed from them, which will be of the same shape as that now in use, and will receive all the ordinary castings without making any alterations in them necessary. The variety of these merchant shapes is so great as to afford a wide range for selection for any given purpose. The point which must not be overlooked, since it is of vital importance, is that in changing from wood to iron we can by the proper selection of forms adopt the iron without changing the castings or constructions. Valuable as this is, yet it is a phase of the subject which has been entirely overlooked by the advocates of iron cars, iron transoms and iron truck frames, who have usually proposed such radical and unpromising changes as to make the car-builders decidedly averse to considering them.

In a conversation recently, with a car builder of long experience, sound judgment and first-class constructive ability, it was suggested that at some future time, when long, sound sticks of timber for passenger car sills became costly and difficult to obtain, a first-class composite sill could be cheaply and easily made which would be very much stronger and stiffer than the best Georgia pine. The idea was to take an I-beam of the proper depth and thickness of web, and by filling in the sides with wood, obtain a cross section which would be similar to that of an ordinary sill. Such a beam would be treated in precisely the ordinary way. The posts would be put into it by mortices, and the panels, castings and end framing would be very nearly the same as now. The transoms, of course, would be connected directly to the iron, the floors, furring, etc., would be attached to the wood; draw timbers and end sills would be held by special castings or by wrought iron straps. This, however, would be a matter of individual convenience. The introduction of iron in such a manner as this would call for scarcely any modification of ordinary construction, and would at the same time give a great increase in both end and vertical resistance. There is also another advantage to be gained by the introduction of iron into car-building in this way. It enables the builder by experiment to find out just how much iron is needed, and just how much dependence can be placed on it in various parts of the car without introducing unnecessary weight or strength and without fear of weakness. If



it were necessary to build an iron frame at once, no little experimenting would be needed in order to ascertain just what scantling would be required; for, in spite of our testing machines and careful experimenting to determine the resisting power of materials, the car-builder in dealing with the strains incident to passenger traffic is largely working in the dark, and would be obliged to make an unnecessarily heavy frame in order to be on the safe side beyond a doubt. This would of course be very much against the success of the iron frame. It would be necessary for him in building an iron frame to put in a very considerable excess of strength over that really needed, and the weight would consequently be excessive. On the other hand, if the work is accomplished by adding strength to a wooden frame, the question is very much simplified, and the iron is gradually brought up to the required strength and finally leaves the wood as a mere convenience.

Perhaps the most important advantage of the method we propose is found in the fact that it does not require a reconstruction of present car shops nor a radical change in their organization. It merely means boring a few extra holes in pieces of metal of greater length or greater weight than the machine shop has usually handled. It means a few extra holes drilled after the frame is together, with a brace and rachet instead of an auger. The woodworking department will need to alter the shape of some of the cutters and get out certain sticks of slightly different forms from those hitherto used.

A PEORIA man staid out in the yard until two o'clock the other night, trying to freeze his dog to death. Five doctors' buggies were standing in front of his house the next morning, and the dog is sucking eggs by day and howling by night, as usual.

Lighting Cars by Electricity.

A thorough discussion of the use of electricity for lighting trains appears in the *Journal* of the German Railroad Union on the occasion of the Frankfort experiments. The general conclusion is, that electric lighting of trains will become practicable when there has been some improvement in the storage of electricity. At the Frankfort experiment a six horse-power dynamo-electric machine in a baggage car was driven from a car-axle. Around the machine and against the sides of the car were placed 24 Faure accumulators, which stored the surplus electricity while the cars were running faster than necessary to develop the amount consumed for the lights, but the surplus was not sufficient to light the three cars during the stops. While running, the cars were brilliantly lighted with the electricity coming directly from the machine. It is said, however, that the storage of electricity would have been better but for the use of lead not chemically pure in the accumulators.

The general conclusions of the writer in the *Journal* of the German Railroad Union are as follows:

I. That the lighting of a railroad train, in the present condition of electric science, is not possible by the Faure secondary battery alone; it is indispensably necessary to carry a dynamo-electric machine on the train for such lighting.

The dynamo-electric machine can be best and most cheaply driven by the car axle, and the power of the train by day can be used for generating electricity to be stored for use at night, and its power by night can be used directly. If the batteries become fully charged by day, they can be taken out and held in reserve at stations, and fresh batteries put in the car.

Whether it is advantageous to put the dynamo-electric machine in the baggage car, as at Frankfort, seems doubtful, as a man is then required to attend this machine, which makes electric lighting too costly.

It is thought that it would be better to have it attached to the rear of the locomotive or tender, where it could readily be driven by a belt from the rear axle of the engine or tender, and the machine in that situation could easily be attended by the engineman and fireman, both of whom have the necessary mechanical knowledge.

When steam heating of cars was first introduced in Germany it was likewise thought necessary to have a special boiler in the baggage car, but now the steam is generally taken directly from the boiler, and the heating is regulated by the enginemen. This will probably be the course of electric train-lighting if the dynamo-electric machine is placed in the baggage car. If it is put there, easy communication between the baggage car and the tender should be established, which, this writer thinks, would not be easy on German trains.

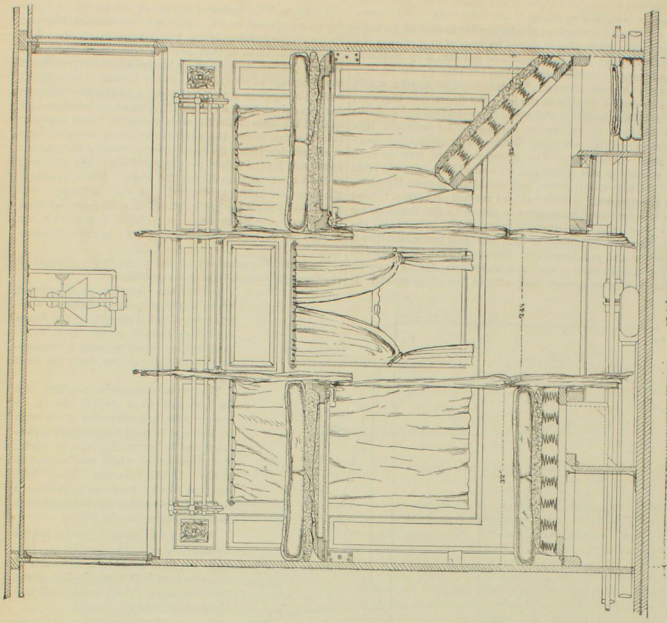
II. To light a train with electricity it is necessary to provide *every car* with Faure secondary batteries, in order that a car separated from the train for one or two hours may be well lighted with them. This can be done by the Faure batteries, since ten or twelve elements completely charged are capable of supplying the six lamps and the requisite intensity.

With regard to cost, the price of a Möhring dynamo-electric machine sufficient for the largest train is about $425. One Faure element costs, if cheaply constructed, about $10. Since there are five or six lamps in a car, 10 or 12 accumulators are necessary, as it requires about two elements to supply one Swan lamp. The lamps are very cheap, costing 25 to 50 cents each. According to this, the equipment of a passenger car for electric lighting will cost about $175, while its equipment for gas-lighting costs at least $225. Bearing in mind the numerous gas works, costing $10,000 to $15,000 each, the gas pipes and the apparatus for supplying the cars, it is clear that the apparatus for dynamo-electric lighting is by far the cheapest.

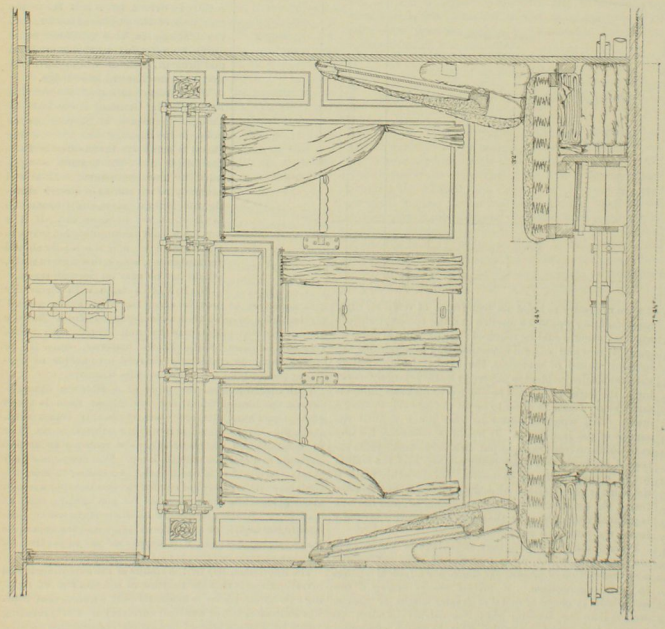
The impression left by the results of the experiments and investigations is that the solution of the problem of lighting cars by electricity is evidently only a question of time. The Frankfort Royal Railroad Directory is now preparing a new train of six cars of improved construction to continue its experiments.

It is thought by some that the final solution will be by the use of the Faure accumulators charged by a stationary engine and placed under each car in an iron case, as needed, as compressed gas is now used. This would avoid making a draft on the power of the locomotive, which is often all needed to make time.

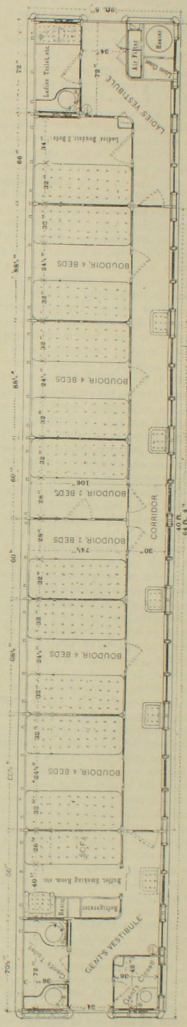
THE New York, West Shore & Buffalo road is completed to Buffalo and will be open for business Jan. 1.



Sectional View of a Four-Place Boudoir in Process of Conversion into a Sleeping Room.



Sectional View of a Four-Place Boudoir Arranged for Day Use.



Floor Plan—Platforms not Shown.

MANN BOUDOIR AND SLEEPING CAR.

The Mann Boudoir Cars.

These cars, since they were designed and patented about eleven years ago, have been used exclusively on European continental railways, but they are now about to be introduced in the United States, and some of them are already running on the night line between New York and Boston. The leading peculiarity of their construction is in the arrangement of the sleeping compartments, which run crosswise the car with the doors opening into a passageway, extending along the car side, as shown in the plan view on opposite page. Some of the compartments have four beds, two on each side, one over the other, and some have only two beds, both on the same side; and in some cases a four-bed compartment has a dividing partition running through it with a door in the centre. The bedding is stowed away so as to be invisible during the day, and each compartment is as much isolated from the rest as a private room in a special car or a state-room in a steamer.

The interior arrangement of the compartments is shown in the two engravings which give a sectional view of the sofas, showing the way in which the bedding, curtains, etc., are kept out of sight in the daytime. The windows and their curtains are also shown. The two side windows

are 3½ feet high. The middle one is movable and can be raised, and all are double plate glass. The luggage-rack is shown above the three windows, and at each end of it a ventilating register. Above the middle window is a handsome beveled mirror. To convert the compartments, as they appear during the day, into sleeping rooms, the backs of the sofas, which are hinged at the top to the partitions, are swung outwards and up to a horizontal position, thus forming the upper beds, while the sofa seats form the lower ones. The space between the two sides of the room when the beds are made up is of the same width as the passage-way in the ordinary sleeping cars. The upper and lower beds have separate curtains, so that the movement of one curtain does not disturb the occupant of the other bed. The sofas are so constructed that the seats can readily be taken off and renovated.

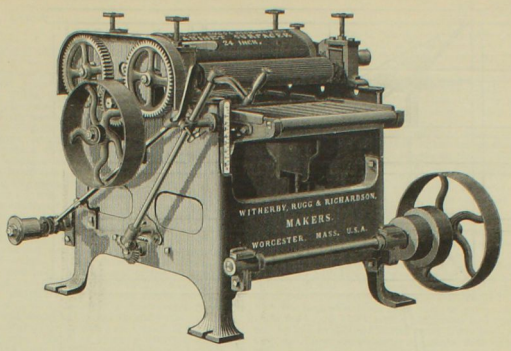
At each end of the car is a vestibule, adjoining which are the dressing-rooms, lavatories and closets, those for gentlemen and ladies being at opposite ends of the car respectively. Connected with the gentlemen's vestibule are a smoking room and buffet. From the buffet light refreshments are furnished to the passengers, and each compartment has an electric bell for calling the porter.

The cars are 64 feet long, and in their external appearance do not differ materially from the better class of special cars of American design and construction. The trucks are either four or six wheel, and 42-inch paper wheels are used, with Krupp steel tires. The interior finish is in amaranth wood, with embossed leather paneling, and is rich and tasteful without being gaudy. This paneling has a lining of thick hair padding interposed between it and the car walls, which makes a softer and more yielding surface in case people are brought involuntarily into violent contact with it. Sharp edges and corners have been avoided in the wood and metal work, so as to lessen somewhat the severity of bruises and contusions in case the car gets to running over the cross-ties instead of on the rails. Ventilation is provided by taking in the air by means of large funnels on the roof, from which it is carried to the heater-closet, passing through an "ingenious filter" on its way, which frees it from dust and cinders. In summer the heater-closet and filter are converted into an air refrigerator, by which the temperature is kept from 12 to 20 degrees below what it is outside.

A number of advantages are claimed for the Mann Boudoir cars over the Pullman sleeping and parlor cars, of which the following are the most prominent: The weight of the bedding in the daytime is nearer the car floor, and the bedding itself does not interfere with the size of the windows. The beds are longer than usual, and the lateral oscillation of the car is felt less than when they are placed longitudinally. The high dome or shell roof, instead of a clear-story roof, is stronger and lighter; and the dead weight per passenger is said to be 15 per cent. less than in the ordinary sleeping and drawing-room cars. The walls and roof having a thick layer of paper under their outer sheathing, and the paper being a non-conductor of heat, the cars are in consequence warmer in winter and cooler in summer. And, furthermore, that the crosswise compartment system contrasts most favorably with the longitudinal sections in the matter of privacy, the sleeping occupants of the sections, irrespective of age or sex, having nothing but movable curtains between them and a public thoroughfare.

Some of these advantages are certainly obvious enough, and if none of them are exaggerated there is no reason why the patrons of sleeping cars should not prefer the Mann system and give it the utmost encouragement. These cars, like most other innovations in railway practice, must stand upon their merits, and these will be judged from a cost point of view, so far as the great traveling public is concerned. There are a good many rich people in this country with large incomes, and the number of such is rapidly increasing. These, as a class, can hardly fail to appreciate the Mann Boudoir cars; but the system, with its many advantages, can hardly win a wide popularity at the start in the face of the Pullman prestige and other less formidable occupants of the field. There is something, too, in a name. "Boudoir" is an unnaturalized exotic, and should have been left to thrive in its native soil on the other side of the water, where the people know how to pronounce it properly.

THE *Railway World*, in referring to the large revenues of the Manhattan Elevated Railway Company, as indicated by its last quarterly report of gross earnings, makes the following pertinent comment: "These large revenues place the Manhattan Company above the necessity of resorting to such a questionable expedient as the use of its cars for advertising purposes, and at the same time render such a proceeding very injudicious and impolitic. In this age of competition no corporation can afford to wantonly annoy its patrons, and it should be the constant aim of all who minister to the wants of the traveling public to add to the comfort and attractiveness of the service rendered. Persistence in the obnoxious system of disfiguring the vehicles a large proportion of the citizens of New York use daily is a flagrant departure from the wise rule followed by all the considerate and successful railway managers of the country. It will inevitably lead to direct and indirect losses of much greater consequence than any paltry compensation that may be paid for the privilege of compelling passengers to gaze upon business announcements."



24-INCH CABINET SURFACING MACHINE.

The cut illustrates a new cabinet surfacing machine, or pony planer, built by Witherby, Rugg & Richardson, Worcester, Mass. It is built in two sizes, to surface respectively 24 and 28 inches wide, and from 8 inches in thickness to as thin as the stock will hold together to be cut, any length over 8 inches having pressure-shoes both sides and reaching well under the cutter cylinder. It will do the very best surface planing. It is very compact and substantial; very convenient to operate, having all the conveniences possible to put on a machine of this class. The bed or table raises or lowers for variations in thickness to be worked. The cylinder carries three cutters, and the journal-boxes being stationary on the frame, admits of belting the machine from above, front or back at any angle, or from a counter on the floor at rear of machine. It is specially adapted to surfacing all kinds of thin lumber, such as is used in car and door panels, carriages, sleighs, cigar boxes, etc., etc. Power required to drive planer, 3-horse. Shipping weight of 24-inch machine, 1,650 lbs.; 28-inch, 2,000 lbs.

The Adelina Patti Car.

The car built by the Gilbert Car Manufacturing Co. for the use of the celebrated prima donna during her tour in the United States this winter is truly palatial. It is 56 feet long, and the sides are made extra strong by the use of wrought iron and steel. The outside finish is in ultra-marine blue, with gold relief. The car has six-wheel trucks, with 42-inch paper wheels. The interior finish and fitting up is thus described by the Troy *Times*:

"Within the car every thing is rich. In the center is a boudoir or parlor, fitted up in amaranth wood, which comes from the west coast of Africa, and in its natural state is of a purplish tint. It takes a beautiful red finish. With the exception of Patti's room, the entire car is finished with this wood. In the center of the parlor is a handsome table. On each side respectively are a sofa and a piano, made of amaranth wood to harmonize with the finish of the room. The apartment is 13½ feet long. Adjoining at either end is a bedroom entered from the side corridor, and adjoining the bedrooms are bathrooms. Hot and cold water are obtained by turning faucets. A French bath tub and long mirrors have places. The sides of the car are finished in heavy leather, with designs in gilt, which gradually lightens until it reaches the top of the car, when it becomes a bright gold color, in handsome figures. The entire ceiling, which is of elliptical shape, is covered by this leather decoration.

"Mme. Patti's room is finished in satinwood, with mother-of-pearl, amaranth and ebony marquetry inlaid work. A feature of the room is the change in color from the rest of the car. In the evening it 'lights up' beautifully. The tapestry in the room alone cost $28 a yard. The rooms in all three cars are connected with the servants' rooms by a system of electric call bells. In one end of the car is a buffet, fitted up in a manner surpassing any thing of the kind ever attempted before. One novel device is an arrangement for boiling eggs, by which the eggs can be cooked soft or hard, without any more attention than is required to fill a cup with a specified amount of alcohol and apply a match. The eggs will then take care of themselves. In the opposite end of the car is the servants' room and the heating arrangements. The latter render it impossible to set fire to the car.

"A particular feature is the manner of securing ventilation without draft or dust. In summer cold air is furnished, and in winter warm air. A funnel runs from the top of the car, exposing there a surface of three square feet, connected with an automatic valve, which changes as the car may be going with or against the wind, so as to continually force a strong current of air to the bottom of the car, where the air is filtered by passing through wet shavings, kept wet by a constant dropping of water from ice stored above the shavings. In summer the air passes through 300 pounds of ice before reaching the shavings, and in the winter it passes through a heating arrangement. After being thus prepared and the dust removed it passes down the sides of the car and enters by a series of small ventilators. As the windows are proof against dust and air, sliding in velvet slides, it is impossible for any dust to get into the car, so that the sweet singer's voice will be as clear at the end of her trip as at the beginning, for aught that dust can do.

"The windows contain a complete series of Landseer's stags in diamond-cut glass designs, silvered and backed by garnet velvet, giving a very elegant effect. The windows are curtained by double silk and satin shades. The walls of the car are of three-ply whitewood, with the grains in opposite directions, to prevent warping. These walls are covered with leather and a rich French tapestry. In the drawing-room is a dado of beautifully-carved amaranth wood. Two handsome oil paintings, costing $700 each, will adorn each side of the room. Four plate-glass windows have diamond-cut designs, representing the four seasons. Two extra large plate-glass windows in the centre afford facility for viewing scenery."

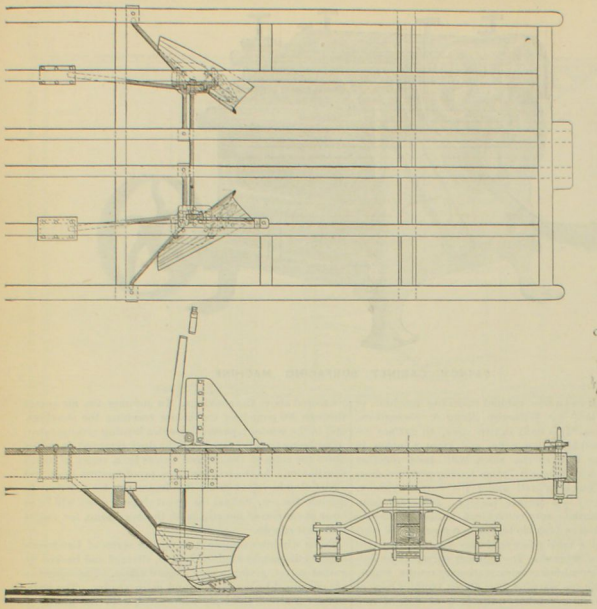
The cost of the car is said to be $40,000. After Mme. Patti has finished her tour the car will be retained by the Mann Boudoir Car Co., the contractors for the building of it, for use by the president of the company.

Fast Traveling on Poor Railways.

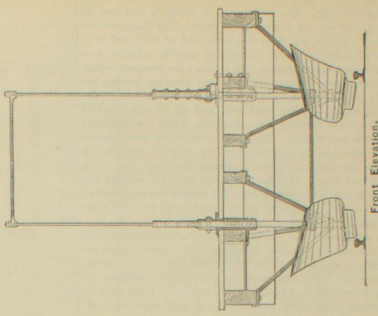
An English writer makes the following pertinent comments on this subject:

"If a railway were perfectly smooth, even and straight, and if the line of draught of carriages passed directly through their centers of gravity, there would be no derailments. Indeed, with perfectly cylindrical tires, and a perfect equality of resistance at every point, flanged wheels would not be required except to provide against the action of the wind; because there would be no reason why a train once set fairly on the rails should be induced to leave them. In practice, however, there is no such thing as a perfectly even and smooth line of rails. The center of tractive effort does not coincide with the center of gravity. There are plenty of curves to be run over, and, in short, the road and the rolling stock are both far removed from perfection. Now, all railway men will agree with us when we state that whether a train keeps on the rails or resorts to the ballast instead, at any given speed, is purely a question of the good and bad qualities of the road and the rolling stock. For example, there are tracks to be found, even in England, over which it is not safe to travel at more than ten miles an hour, and there are also tracks over which we would be quite willing to risk our life at 100 miles an hour. Between these extremes there are all kinds of roads, which may be classed as 20 mile, 30 mile, 40 mile an hour tracks, and so on.

"In like manner there are 20, 30, 40 and even 70 miles an hour engines and carriages. If a road were all of the 20 mile, or all of the 40 mile type, or of any fixed type, indeed, throughout, the running of trains would be much simplified and the risk of derailment much diminished. As a fact, however, in the middle of a length of, say, 100 miles of 45 miles an hour permanent way, we come upon a mile or two of 20 miles an hour road. Over this trains run for years, and safely—apparently at least. No one knows how bad the bad bit is but the driver. There is nothing like standing on the foot-plate to know where a rough mile comes in. At last it so happens that a 20-mile carriage comes at 45 miles an hour on to the 20-mile bit of road. Then comes derailment and a coroner's inquest, and a board of trade inquiry, and the road is examined and is said to be very good; and the engine driver is also examined and he says he can't explain it, and the stoker knows nothing about it—stokers never do—*vide* coroner's inquests."



Half Side Elevation and Plan.



ICE FLANGER—CENTRAL PACIFIC RAILROAD.

THIS device is designed for the removal of ice from railway tracks, and can be used as an attachment to a flat car. The Flanger can be raised or lowered by means of a lever, as shown.

Iron Cross-Ties on Railroads.

In Germany, at the end of 1881, some 3,606 miles of road were constructed with iron sleepers instead of wooden cross-ties. Of this road 2,264 miles had longitudinal and 1,242 miles transverse sleepers. During the year 1881 there was an increase of 380 miles laid with longitudinal and 412 miles laid with transverse iron sleepers. Germany has used iron as a substitute for cross-ties much more extensively than any other country, and apparently with satisfactory results, as renewals are largely made with iron, the whole length of the new road constructed in 1881 being much less than the increase in road with iron sleepers, and the statistics show that there was a decrease of the ordinary road with T-rails on wooden cross-ties amounting to 198 miles, and also a decrease of 53 miles in rails laid with chairs on wooden cross-ties. There are still 268 miles of road in Germany laid on stone supports, and 16 miles of such road were laid in 1881.

Iron does not seem to be used to any extent for this purpose elsewhere, except in Holland. Experiments were made in Belgium several years ago with some of the German systems, especially with a view to giving work to the suffering iron manufacture of that country, but they seem not to have been satisfactory, and we hear nothing more of the use of iron for that purpose there, though, as iron is perhaps cheaper in Belgium than anywhere else in the world, and it imports its ties, it would seem that it is one of the most promising fields for the use of iron. Timber is not costly there, however, as it is brought from Baltic and North Sea ports at little cost for freight. It is somewhat remarkable that England should have been preceded by Germany in the extensive application of iron for this purpose. It will be noticed that though there is more road on longitudinal than on transverse iron sleepers in Germany, the increase in 1881 was greatest in the latter. —*Railroad Gazette.*

A New Block Signal System.

Walter C. Beckwith, of Norwalk, Ohio, has invented a new block signal system which is described in the *Railway Reporter* as follows:

"The device operates the block system on an automatic plan, which shows a signal in the rear as well as in front of a passing train. The signals are operated by the train in passing over points on the road where the pneumatic pumps are located, and in leaving one section the train throws the signals off behind and sets them on the block entered upon. A train following is held by the signals at the distance of one block in the rear of the preceding train. A train coming from an opposite direction acts on the system in a similar manner, keeping the signals set one block in advance, with danger signals set also in its rear. Trains approaching each other in opposite directions set the signals against each other at the regular signal distance, so that ample time is given to come to a halt before there is danger of a collision. Pneumatic pressure is used, the current of air working the signals being forced ahead of an approaching train and setting the signals automatically. The train operating a signal never sees it; if an engineer sees a signal he knows it is set by an approaching train, and that it is his duty to stop. It is claimed for the system that it will reduce the number of accidents by collision by from 60 to 75 per cent., and afford almost absolute protection from this class of disasters. It is said to be the best system yet devised for crossing at grade, as it will set the signals to danger in each direction on both lines, and in this way save much time to trains. The new system has been examined by a number of leading railway engineers and others, and all of them unite in saying it is a thing much needed, and has only such slight defects as can be easily remedied at an inconsiderable expense."

A company calledthe Auto-Pneumatic Signal Company of Pittsburg, has been formed, with a capital of $250,000, for the purpose of introducing the new system on the railways.

The Rote Automatic Car Brake.

This is a recent invention, and is very favorably spoken of by those who have witnessed its operation. A few weeks since the first public trial of this brake was made on the Strasburg road, in Pennsylvania. Concerning this trial and the operation of the new device the Lancaster *Examiner* says: The train consisted of an engine and three cars. Next to the engine was placed the car equipped with the new brake, then came a box freight car heavily loaded and finally a passenger car. A portion of the flooring of the car, immediately over the brake mechanism, was removed, exposing to view its operations while in motion. During the trip over the road, which includes some heavy grades, one being about 70 feet to the mile, the brake was put to every known test and responded promptly.

This brake belongs to the class popularly known as compression brakes, the brakes being applied by the compression of the draw-bar when the speed of the engine is checked. An ingenious, yet simple device, controlled by the speed of movement of the car, automatically regulates or controls the brake-setting mechanism, rendering the latter operative or inoperative as occasion requires.

The brake is inoperative while the car is at rest, but becomes automatically locked in operative position by the movement of the car when the latter is being drawn, and is ready to be applied when needed as soon as a speed of about two miles per hour is reached. After the car has been at speed and the brakes are applied they hold until just before a completed stop is reached, when they are automatically released and the train is free to be immediately backed without first taking up the slack. The train does not move more than four or five yards after the brakes are thus automatically released, yet they are infallibly released before a complete stop is reached. It may be remarked here that the speed of the train may be restored at any time at the will of the engineer, the simple act of pulling out freeing the brakes. An ingenious feature of this same automatic regulating device is that there is no obstacle or hindrance to pushing or backing a car or train at any rate of speed.

Car-Builders' Meeting at Buffalo.

A meeting of Master Car-Builders was held at the Tifft House, Buffalo, Dec. 12, at which the following gentlemen were present: Charles Graham, Robert McKenna, Delaware, Lackawanna & Western; J. W. Marden, Fitchburg; J. D. McIlwain, Grand Trunk; John Kirby, A. C. Robson, Lake Shore & Michigan Southern; J. S. Lentz, Lehigh Valley; R. Miller, R. Potts, Michigan Central; Leander Garey, E. A. Olmstead, New York Central & Hudson River; John McKenzie, New York, Chicago & St. Louis; F. M. Wilder, New York, Lake Erie & Western; E. H. Bowman, Pennsylvania & New York; J. P. Hovey, Rochester & Pittsburg.

Mr. F. M. Wilder was called to the chair, and Mr. J. S. Lentz was made Secretary.

After discussion the following resolutions were adopted:

"*Resolved*, That it is the sense of this meeting that roofs blown off cars while in transit, and which upon examination show faulty construction, namely: The ends of the carlines improperly fastened to the plates, tin roofs improperly cleated down, or rotten carlines or plates, the owner of said car or cars shall be at the expense of replacing the roof, and not the companies in whose possession the car was when the roof was blown off.

"*Resolved*, That all cars unfit for interchange traffic be marked 'Local,' and the capacity be stenciled on said cars.

"*Resolved*, That cars in through traffic which have leaky roofs be marked with a sign, stenciled 'leaky roof; sent home,' and that the road responsible for the car be notified of the condition of all such cars."

It was decided to hold another meeting at the same place on the second Wednesday of February next.

A HASTY man, with his arms full of his wife's baggage, thought he was left by the train last night, and running rapidly across a platform, fell over a truck. He straddled one of the handles and rode it for a second, then got his legs tangled up in the cross-pieces, when the malicious thing reared up and slid forward just enough to throw the man off his balance and get him down; he blacked his eye and broke his spectacles against the handle, ran over his foot with the wheels, and even after he got away from it and was seated in the car, he says the truck ran after him and kicked him twice in the ribs before the brakeman could take it away from him.

December Meeting of the Car-Builders' Club.

CARRYING CAPACITY OF FREIGHT CARS.

Mr. L. Garey, the President of the Club, announced the subject for discussion :

Mr. C. A. Smith said : We will go back a few years to the time when the standard axle was agreed upon. The idea that most of us had at that time was that no freight car could carry more than ten tons, but now these cars are carrying 25 and 30 tons. Cars are also marked now with 50,000 pounds capacity, and probably the most of them that are now built are marked 40,000 pounds, and this is generally regarded as the standard carrying capacity at the present time. Just think of the change that has occurred in this respect since we adopted the standard axle ten years ago. Many of these 40,000 pound cars are loaded no doubt with 50,000 and even 60,000 pounds when the bulk of the freight will permit. I do not think that 50,000 pounds is the limit at which we can stop. I know of cars that are now carrying 40,000 pounds on the standard axle just as well as they carried half the weight twenty years ago. I do not think that thirty tons is their greatest capacity. "Well," you may say, "the cars have to be built differently ; you can not get that weight into a car." I am aware of that. We can not get ten tons, even, into all the freight cars, especially when the freight can not be got to put into them. If we could get at the average tonnage actually carried in cars, say the average loads going west and east, we could then see just what loads are carried. I am in favor of larger journals and axles than we now have. The heavier the load the larger they must be. I think our standard axle should have a diameter of 5 inches in the center in order to carry the large loads. There would then be no spring in the center. I know there are objections to increasing the size of the journal, but as railroading is now the point is to carry the freight in the cheapest possible manner, and this is to be brought about by carrying large loads. On this account I am in favor of a radical change in the existing draw-bar and spring attachments. The improvements made within the last ten years are, in my judgment, not at all in proportion to the increase of loads. Many of them are the same that were in use ten years ago.

Mr. R. C. Blackall : I would ask if a radical change must also be made in rails and bridges.

Mr. C. A. Smith : The change in rails and bridges has been made already. The rails are of steel, and both rails and bridges are capable of taking a train of locomotives with a considerable margin of safety.

Mr. Wm. E. Partridge : I have recently talked with several railway officials in regard to this subject, and have heard a good many points on both sides of the question. One manager told me that the average load carried in the freight cars of his road was only 7 tons, and that he thought it unwise to build all his cars with a capacity for 20 tons when the general run of freight consisted of merchandise and other things whose bulk precluded the possibility of getting that weight into the cars. There was also another point in regard to the utility of 20-ton cars, which was, that in case of delay, or the necessity for transhipment from any cause, the freight that came out of the large car was pretty sure to go into an old-fashioned car, built to carry only 10 tons, and when this car got into a heavy train on some other road, it would get discouraged and let go and there would be an accident to pay for. The other side of the question, however, was put somewhat in this way : One manager had a great many heavy loads to take, and two, three or four times a week he would be called upon to load 60,000 pounds if there was a car to take it ; and his plan was to stencil 40,000 on every car, and every car that proved to be too weak for the load would speedily reach the scrap heap. In this way the fittest only would survive. The cost of hauling the extra weight, or of building larger and stronger ears, was not a serious matter. But the $8.50 stove-casting wheels that came here from some of the western roads would not answer. Another manager was for finding out what was the most economical weight for a car-load, by ascertaining what was the average car-load, and the cost of carrying freight in 10, 20 and 30 ton loads, as far as it could be ascertained from the road statistics. In doing this he would take some account of the cost and repairs of cars, and then he would know what was the best size for cars to carry the freight of his road. This point decided, the car-builder would be relieved of further responsibility, except in designing the cars to carry specific loads. If the repairs are doubled it is the manager's business, as he has decided that doubling the repairs is cheaper than to carry half loads. The manager can, in fact, decide just how much extra repairs he can put on and still have the large cars cheaper than the three, five or ten-ton cars. If he can get the needed statistics he can settle the matter definitely for his own road, and other roads can pursue the same method, and a general average can then be struck.

Mr. Blackall : Our road has a large number of 4-wheel gondola cars, and from my experience I think that 9,000 pounds per journal is as much as the standard axle can carry. If this weight of 18,000 pounds per axle, or 18 tons for a 4-wheel car is exceeded, there will be trouble from hot journals, even if the excess is not more than 500 pounds per car. In carrying coal the weight is equally distributed, while with many other kinds of freight the load upon the trucks is not equal.

Mr. George Hackett said there was not much difference in the repairs of light and heavy cars. It was a little more on the heavy ones. The principal expense was on the draw-bars.

Mr. J. T. Leighton : I believe a car can be made that will carry 25 or 30 tons. The only question is as to the economy of it. I think when you come to pay for the hauling of the extra weight of tonnage cars it will amount to something. If you have 25 tons of freight, it is all very well to take it as a car load ; but a great part of your freight don't weigh the half of that. If you are going to carry 25 tons, the dead weight of the car must be increased ; and if it is increased 10, 15 or 20 per cent., and only carries the same average load that we always have carried, the cost of transportation will be very much increased. I believe, however, that a car can be made that will carry thirty tons, or of almost any capacity that is wanted. In building such cars we must find out what parts are to be made stiffer and stronger. I believe your journal can be made to carry this weight, and not cost any more than it does to-day. Something, however, will have to be added to the center of the axle, and there must be an extra weight in wheels, timber and iron. When these things are considered in connection with the fact that a great portion of the freight is bulky and comparatively light, you will find that as a matter of economy the theory of light tonnage is the correct one. Bridges and rails will take care of themselves, and will be made strong enough in case it is decided to build heavier cars to run over them.

Mr. Partridge : I recently saw a 34-foot car with a stenciled weight of 19,950 pounds, and a stenciled carrying capacity of 40,000 pounds. A dozen years ago or so, I saw cars that were perhaps three or four feet shorter, that weighed 24,000 pounds, but the capacity of which was only 10 tons. These figures indicate a reduction in dead weight and an increase of paying load within this period, that would hardly have been thought possible a few years ago. We have doubled the carrying capacity, and at the same time have reduced the weight of cars several thousand pounds, a thing the car-builders ought to be proud of. It would seem from this, that it does not cost any more to haul the heavy cars now, than it did the smaller and lighter ones some time ago.

Mr. Leighton : I was for reducing the dead weight of cars at the time referred to; and the fact that a 12-ton car could then carry only 10 tons, while a 19,000 pound car now carries 20 tons, is a proof that I was right.

Mr. C. A. Smith : A standard car can be built that will carry 20 tons and not weigh more than 19,000 pounds. The greatest dead weight is in the short cars, with their numerous draw-heads, etc. A statement of the weights of 29, 30 and 34-foot cars was prepared by a committee a few years ago, of which I was a member, which showed that the excess of weight in the short cars was very great. It is a question with many as to what should be the maximum length of a freight car to run well. Look at the United States postal cars. Some of them are 60 feet long, and don't you think their length makes them run better ? If not, why don't they have two cars instead of one, and run them separately ?

Mr. Leighton : A postal car is a different thing from a freight car. They are not made long in order to carry 20 or 25 tons of freight, but because room must be had in them to do a certain kind of work. If we built cars years ago that were too heavy to carry average loads of freight, let us make them lighter ; then we shall not need heavy cars of 25 tons capacity, and be obliged to use these same cars for carrying 10 tons. Let us hit upon an average load, say of loads going west from New York and coming back, and have cars you can use anywhere, instead of excessively large and heavy ones that can't be used everywhere with economy, especially when an accident happens.

Mr. Angus Sinclair : The demand for an increase of car loads originated with the narrow-gauge people, who claimed they could carry loads with less dead weight than the standard-gauge cars could. In consequence of their arguments, greater loads began to be put in standard-gauge cars, and those that were intended for 10 tons carried 12 and 14. The increase of repairs was not in proportion to increase of load, and it was found that the large loads were much the cheapest. In heavy trains it is desirable to have as few cars as possible. When our cars carried only 10 tons, there were only from 25 to 30 cars in a train. When 18 or 20 tons were carried the trains were reduced to 20 cars. It was found that short trains hammered the rails less, and in this respect were the most economical. The essential thing in this matter is to find out what is the most economical load for a car, whether it be 20, 40, or some other number of tons, and then build the cars accordingly. The chief duty performed by cars in this country is to carry through freight. As the country becomes more densely settled, heavier cars will have to be used for through traffic, and this will have to be taken into consideration in order to determine what is the most economical load with reference to the whole country and all the railroads. Any road with a first-class road-bed and track can carry heavier loads than are desirable on Southern, Southwestern or Northwestern roads, and, consequently, until the permanent way of all the roads is more uniform, the question will have to be decided by a general board of managers, or by all the master car-builders after a full consideration of all the elements in the problem, present and prospective. I certainly think that 20 tons is not the limit of economy. In time cars will run from Denver to the seaboard without transferring their loads ; or, if loads must be transferred from the heavy cars, they can be put into two smaller ones.

Mr. C. A. Smith : When we take into consideration the great advantages to be gained by having longer cars, we must think of all the parts, the draw-bars, the draw-bar fixtures, springs, brakes and every thing connected with them, the number of wheels and the work upon the trucks, and consider that these are the same whether the trains are long or short, whether they carry a large load or a small one, provided only that the number of cars is the same in each case. The advantages to be gained are simply enormous. It can not be otherwise. I said years ago that I would have a box freight car 40 feet long and 9½ feet wide ; and to carry the car and its load, I would have good wheels and axles, and journals longer than we have now. Freight can be carried in 35-foot cars for less money than cars of the ordinary length. To do this in 40-foot cars, there would have to be a radical change in draw-bar fixtures, and perhaps steel or even paper wheels would be necessary.

Mr. Leighton : You will remember that I am an advocate for a reduction in the dead weight of cars. It does not follow from this, however, that such reduction consists in all cases in simply making a car weigh less. If a car weighing 24,000 pounds and carrying only 10 tons is, by being increased in weight from 100 to 500 pounds, made capable of carrying 20 tons, have we not by so doing reduced the dead weight in proportion to the tonnage ? If you can put 25 tons of freight in your car every time it is loaded, why, well and good. That does not conflict with my basis.

Mr. C. A. Smith: What length of cars do these express companies run ?

Mr. Garey: The longest is 50 feet.

Mr. C. A. Smith: Do they not carry more than 20 tons ?

Mr. Garey : They are not allowed to carry even that much.

Mr. C. A. Smith: On the 35-foot cars, years ago, with a small axle, we used to take 15 and 20 tons, and on fast trains too. The postal cars run in fast trains, and the cars of the express companies also run in the same kind of trains.

Mr. Peter Smith, N. Y. C. & H. R.: I can not see any use in increasing the capacity of cars very much. The average car load from the West to the city of New York is 14 tons, and the average in the contrary direction is not over 8 tons. These are fair averages. I think we should have some cars for carrying heavy loads. Sometimes we have calls to carry 25 and even 30 tons. These loads we have not undertaken to carry yet. I think we might increase the loads of our flat cars for carrying rails, coal, etc.; but as regards the general run of freight, I have noticed that a great many cars going from New York to the West had a piano in them, some had two barrels of sugar, four or five barrels of herring, two or three of ale, etc. The freight is broken up into such small quantities that it is very seldom a car carries more than 7 tons from New York. Where are the old 10-ton cars that were loaded with 18 tons ? And how about the 20-ton cars that come in loaded with only 10 tons ?

Mr. —— said : Taking the railroad business of the country as a whole, if 25 tons is to be an average load, and if we load our cars accordingly, we are all right. But 25 tons is not an average load at present, and consequently we are carrying a great quantity of dead weight every time, and it is a thing that can't be wiped out. It is not a question of repairs, as things are now. When you put 25 tons in your cars you are all right, but when you put in only 10 tons you are all wrong.

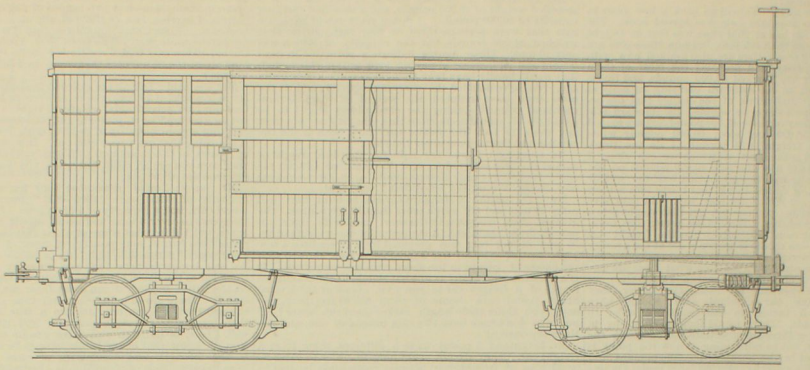
Mr. Garey : You all remember that ten years ago the majority of what were called coal "jimmies," or four-wheel cars, had a capacity of 4 or 4½ tons. I built some of these cars to carry 6 tons, and some people thought I was crazy, but I think that some of these cars are to-day carrying from 8 to 10, and possibly 12 tons. I then, after a great deal of persuasion, induced our people to build some 8-wheel hopper-bottom coal cars to carry 15 tons, and these led to the 40,000 pound cars now in vogue. Having set the ball in motion, it ran away from me, and I cannot stop it. There are so many elements that enter into this subject that we can only acquire a true knowledge of them gradually and by experience, and this experience will, I fear, be quite an expensive one in many respects. You all know that heavy bodies have to be moved slowly. If the strength and dimensions of cars are increased so as to carry loads of 25 or 30 tons the trains must necessarily be started very slowly in order to keep the cars together. They must also be run at a low rate of speed, unless we have some means by which such trains can be controlled at a high rate, and this is a problem yet to be solved. This slow running would increase the time required to move a ton of freight a given distance. This is not characteristic of our country and people. Dispatch is what we want, and having proved by experience that trains of ordinary freight cars can be moved at a speed of 25 and even 30 miles an hour, with less cost per mile run for repairs than at a speed of 12 miles an hour, it would seem that in the matter of repairs and speed a 40,000-pound car is about the limit. If we can control trains and run them at 25 miles an hour, loaded to the full capacity of the engines, we can transport freight at about the minimum of expense. The locomotives of to-day are not materially different from those of 12 years ago, and I think that almost every master mechanic will tell you he is now moving loads nearly twice as heavy as those he moved a dozen years since. This shows that we have been doing the best we could, and now I fear we are likely to overdo the thing. I am in favor of increasing the capacity of coal cars to 25 tons, and I think that such cars can be handled if we put them together in one train. I doubt if they can be handled in mixed trains, as such trains are usually handled on other than coal roads. I think that in respect to the general railroad traffic of the country there is little or nothing to be gained by an increase of the present carrying capacity of freight cars. If any of us live to witness a condition of things that will enable us to load 40,000-pound cars to their full capacity, going one way, even, we shall be a good deal older than we are now.

Mr. Leighton : A word more about the matter of extra weight. There is one prominent member of the Car-Builders' Association, who is, I think, an advocate of increased carrying capacity for freight cars; yet he has reduced the weight of his passenger train cars, including baggage, mail and express, very materially. I refer to Mr. Adams, of the Boston & Albany road, who is now building the lightest passenger cars in proportion to the weight of the passengers carried that are to be found in the country. I believe he has reduced the dead weight of such cars to an extent equal to one half the weight of the passengers, which is a big saving.

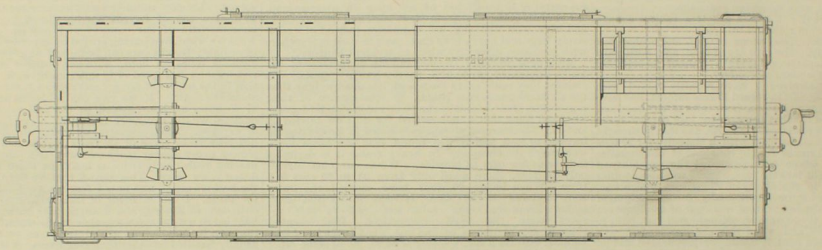
Mr. J. S. Lentz : I am in doubt which side to take. I would say, however, that I would agree with Mr. Smith in so far as the building of coal cars is concerned, or of open freight cars, upon which from 20 to 30 tons can easily be put. But as for increasing the loads of cars that carry miscellaneous freight and general merchandise, I am inclined to think it would not be economical to do it. The expense of keeping coal cars of 20 tons capacity in repair is not any greater than that of cars of less capacity. I find that cars of this latter class suffer from running in trains with heavy coal cars, the expense of repairs for the lighter cars being much more than such expense on the heavy cars, so much so, in fact, that on the eastern division of the Lehigh Valley road we run the heavy coal cars in trains by themselves as much as possible. I would say, then, increase the capacity of your flat and coal cars, but not of your box cars. I think journals 4 inches in diameter are large enough for 30-ton cars.

THE Baltimore & Ohio Railroad Co. during the year ending Sept. 30, built at the Mount Clare shops 22 consolidation engines, each weighing 107,250 pounds, with 20 × 24 cylinders and 50-inch driving wheels ; also 3 passenger engines with 19 × 24 cylinders, and 3 with 18 × 24 cylinders, all having 69-inch drivers, and weighing 91,000 pounds each ; the whole number built, including 2 switching engines, and making 30 in all, cost $278,970, or an average of $9,299 each. During the year 1,981 cars have been built and rebuilt, including 15 eight-wheel passenger, 51 feet 8½ inches long, with large windows and double blinds, finished in the interior with solid mahogany and bronze trimmings, decorated with oak head linings removable in sections, and furnished with double-burner bronze lamps ; one car for the postal service, with six-wheeled trucks ; one baggage, 51 feet 8½ inches long, with standard trucks and all modern conveniences ; 1,332 house, 207 stock, 38 eight-wheeled iron coal, 10 express, 139 gondola, 2 hopper gondola, 217 side-dump, 15 caboose, 3 flat bottom and one rigger's car. All the freight cars built have a capacity of 40,000 pounds.

28-FOOT COMBINATION CAR—CENTRAL PACIFIC RAILROAD.



Side Elevation and Section.



Plan.

Ventilation Fallacies.

The following suggestions on the subject of ventilation are credited by an exchange to Dr. Charles R. Dryer, of the Fort Wayne College of Medicine. Although what is said has reference to the ventilation of buildings, the reasoning in refutation of certain alleged fallacies will be none the less interesting to car-builders who have long been wrestling with the subject. The Doctor says:

"The first and great popular fallacy in regard to ventilation is that it needs no special attention. This is a more serious error among the well-to-do than among the poorer classes, inasmuch as the houses of the former are more nearly air-tight. With solid brick walls, double-sashed windows, weather-stripped doors, and a base-burning coal stove, the exclusion of pure air is carried to the utmost extent. This condition is happily somewhat relieved by the use of open coal grates. But how many fine houses does the physician enter without noticing the close, foul odor, and the stifling air which comes from over-heating and poor ventilation? In such rooms he finds nervous, headachy women, and pale, irritable children, suffering from colds the winter through. Such families need judicious instruction that respired air contains one of the most virulent poisons known, and that dry and overheated air is debilitating and irritating, leaving the mucous membrane sensitive, to be inflamed by every breath of the natural atmosphere.

"The second popular fallacy is that the poison of respired air is carbonic acid.

"This is an example of superstition in the survival in science of an idea long after it has been proved to be false. It is perpetuated in school text-books and popular treatises innumerable. Indeed, correctness of statement upon the subject is the rare exception; gross error the rule.

"Carbonic acid gas is no more poisonous than water; animals immersed in it die just as they do if immersed in water, and for the same reason, viz., want of oxygen. Birds have been made to live in an atmosphere containing from 35 to 40 per cent. of pure carbonic acid, and about an equal per cent. of oxygen. Yet when the carbonic acid of respired air rises to one per cent. that air is a very dangerous poison. The solution of this puzzle is that respired air contans a very small proportion of poisonous organic matter, which is constantly exhaled from even the healthiest lungs. Its exact nature has not been determined. It is the source of the foul odor so characteristic of badly ventilated rooms. The air from the exit of pipes of a crowded hall darkens sulphuric acid, decolorizes potassium permanganate, and causes water, or a sponge saturated with it, to putrefy. This poisonous matter is produced in quantities proportionate to the amount of carbonic acid, hence the quantity of the latter is an indicator of the relative quantity of the power, and carbonic acid should never be allowed to accumulate in occupied rooms to the extent of seven-tenths of one per cent.

"The third popular fallacy is that the most impure air accumulates near the floor of the room. This false idea has probably arisen from the fact that carbonic acid is more than half as heavy again as air, and can be poured from one dish to another like water. Although this is true when both gases are at the same temperature, a very little difference of temperature is sufficient to reverse these conditions. Respired air issues from the nostrils at a temperature of nearly 100° Fahrenheit and is lighter than the outer air at 70° or 80°. Again, the temperature of the body is nearly 100°, usually much above that of the surrounding air. This is sufficient to create an upward current rising from the body of every person in the room, just as the heated air rises above a hot stove. If to these influences be added the more powerful action of a stove, register or other heating apparatus, it will be understood how the impure air rises and accumulates very rapidly near the ceiling. This can easily be proved by experiment, such as placing candles at various heights. The upper one will burn much more dimly than the lower. At the same time the cooler air from the floor moves toward the stove to enter it, or to join the current rising from it.

"The fourth popular fallacy is that the outlet for impure air is best placed at the top of the room, and the inlet for pure air at the bottom.

"This may seem a contradiction to the third fallacy, but it is not, for several reasons. An opening into a cold place at the top of the room is often not an outlet at all, but simply allows cold air to drop down into the room. If it be an outlet it is very wasteful of heat. The air of the room is heated at some expense, and then turned out of doors as soon as possible. If the inlet be near the floor there will be a cold draught upon the feet of the occupants of the room, and, although such an arrangement may ventilate, it will be attended with such disadvantages as to render it highly objectionable. Wherever possible there should be an outlet near the floor into a heated flue, in which the upward draught is sufficient to constantly draw the cooler air off the floor. An open fire-flue is the most efficient outlet that can be devised. Instead of that, a direct draught stove, in which a door above the fire may be opened, answers the purpose admirably. The inlet may be for pure heated air through a register near the floor on the opposite side of the room from the outlet, or for pure cold air by an opening directed upward behind the stove, and above the heads of the occupants of the room. Thus all cold draughts will be avoided; the pure cold air will mingle immediately with the impure air near the ceiling, and the room will be equably and economically warmed and effectively ventilated."

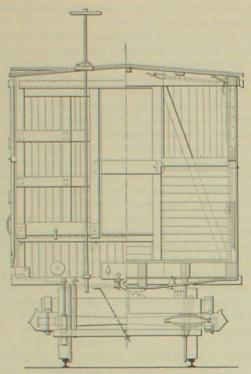
Smokers Demanding Their Rights.

Complaints against railway imposition are becoming more numerous. This is the last exposé:

At present smokers have no protection whatever while traveling on railways. They are forbidden by rule to smoke anywhere except in the smoking car, and they are crowded out of the latter by people who do not smoke. At least two-thirds of the men who ride in the smoking car are men who are never seen in the act of smoking—at all events when traveling by rail. On a railway train of average size there are, let us say, sixty men who want to smoke in the smoking car. That car holds about sixty people, and is always full; but of these people only twenty are ever seen with cigars or pipes in their mouths. There are, then, at least forty smokers on every train who are deprived of their rights, and in behalf of these our courts should be called upon to act. The great principle that smoking cars for smokers must be sustained, and the smokers must be protected against the wanton and wicked encroachments of the non-smokers who maliciously ride in smoking cars. There are two theories which explain the conduct of non-smokers in monopolizing smoking cars. One is that the persons guilty of this practice are so stupid that they cannot distinguish between a smoking car and one free from the smell of smoke. This, however, is very improbable, for it requires a degree of stupidity which is never met outside of an idiot asylum. The other theory, that the non-smoking occupants of smoking cars are anti-tobacco fanatics, maliciously determined to keep their fellow-men from smoking, is vastly more probable.

Street Car Starters.

A great deal of ingenuity has been expended on the invention of street car starters. A man of humane tendencies watches the horses tugging and straining to get a car started, and he naturally thinks it would be a relief for the horses and a fortune to the inventor who could devise an appliance which would absorb the work done in stopping a car and give it out in starting. The more this philanthropist thinks of the car starter the more convinced he becomes that he is in the way of preventing cruelty to horses, and of laying the foundation of his own fortune. It does not take long to plan a spring arrangement which can be wound up by the moving car which it tends to stop. Then he gets the device through the patent office, but in the meantime the discovery is made that a multitude of inventors have already been in this field. However, inventors are a hopeful race, and the man with the car starter consoles himself with the reflection that his invention is a little better than anything previously developed in this line. If he prove very persistent and persevering he manages, after much discouragement, to have his starter tried on a car. Somehow it does not give out all the power expected, so there must be something that needs



End Elevation and Section.

adjustment, and the device is taken off for the purpose, but it is not put on again. Meanwhile, other men are seized of the same idea and a similar cycle is traversed.

The parties who bring out the car starters work on a mistaken notion. They know there is a good deal of power lost in stopping a car, and they think most of it can be preserved, which is a mistake. If the stopping appliance caught the car at its highest speed and destroyed the velocity within a foot or two, it might receive nearly the whole of the energy that was in the moving car. But this is not practicable. The device must stop the car by degrees, and in the space passed over a considerable percentage of the energy is dissipated by the wheels rubbing on the rough track, and the friction of the apparatus absorbs some power. When the losses are all summed up there is very little energy left in the spring to be available for starting the car. In places where cars run down steep grades where they require braking, there may be a possibility of absorbing energy enough to be useful in starting or even in helping the car up another hill; but for ordinary stops on a level no power can be preserved which will pay for the apparatus.—*American Machinist.*

English Railway Notes.

LONDON, Dec. 16, 1883.

To the Editor of the National Car-Builder:

The best arrangement and size of driving wheels for express passenger engines is a subject that has been much discussed, and about which considerable difference of practice and opinion prevails, especially in England. The late Zerah Colburn, one of the ablest writers on mechanical engineering, always maintained that an engine with four coupled wheels about 5 ft. 6 in. diameter would run a fast, heavy train with greater regularity in all states of the weather than an engine with a single pair of driving wheels, 7 ft. or 8 ft. in diameter. In the early days of railway working, the latter type of engine was almost exclusively employed for passenger trains, but gradually, without adopting Mr. Colburn's views in their entirety, a compromise, the usual destiny of hotly debated questions, was effected, and large, but coupled wheels, came into general use.

The advent of steel rails, which permitted a greater weight to be placed on a single pair of wheels, induced Mr. Patrick Stirling (S. M. P. Great Northern Railway) to build some single-wheel express engines, and compare their performance with those of four coupled engines having the same sized cylinders and wheels. The single engines proved the fastest, the most economical in coal and repairs, and less liable to breakdowns on the road, while loss of time through slipping was found curable by making the sand-box damp-proof and paying attention to the drying of the sand. Experience gave the same result on the Great Eastern Railway, where the trains were slower and lighter, but the gradients heavier, 74 ft., 63 ft., and 53 ft. per mile against 40 ft., 30 ft., and 26 ft. per mile. On both lines engines with large outside cylinders, single pair of drivers, truck under the leading end and single pair of carrying wheels behind the fire-box were adopted, the Great Northern having 18×28 cylinders and 8 ft. drivers, and the Great Eastern 18×24 cylinders and 7 ft. 6 in. drivers. The Manchester, Sheffield & Lincolnshire, a line that hitherto has been devoted to inside cylinders and coupled engines, has also recently built some engines with outside cylinders and single pair of drivers of similar size. A heavy outside plate-frame is firmly bolted to the cylinder and carries the bearings for the carrying wheels placed immediately behind the cylinders and fire-box respectively. An analysis of the running speed of about 130 of the fastest English trains shows conclusively that the single engines have the advantage in speed. The average results shown below have been compiled from carefully prepared speed tables, from which trains which are sometimes run with coupled and sometimes by single engines are excluded. The "running speed" is obtained by deducting the time occupied in stoppages, and making an allowance for the loss of time in getting up speed and slackening for stops. Nothing is allowed for slackening through junctions or at crossings. The latter are rare in England, and the legislature refuse rather to sanction their construction than enforce a compulsory stop at every crossing. This law, which prevails in Ohio and other States, forces a train which nominally runs for over 100 miles without stopping to pull up every 10 or 12 miles.

	Average distance between stops.	Speed, including stops. Miles per hour.	Running speed excluding stops. Miles per hour.
Single drivers.....	40 miles.	44.6	53.7
Coupled drivers.....	35 "	41.4	50.4

It is difficult to say positively whether the gradients worked over by the coupled are the more severe or not, but there is probably little difference either in the weight of train or gradients. The average train may be taken at 15 vehicles, 3 of them being baggage cars, 3 first class carriages holding 24 passengers each, and 9 second and third class carriages holding 50 passengers each. The train will, therefore, seat about 522 passengers, and, taking the year round, will on the average be rather more than ½ full, say contain 180 passengers.

The number of passengers in summer and winter differs more in England than America, and, owing to this and various other reasons, more seats in proportion to the passengers carried are provided in England than in any other country. The average American express train probably conveys about the same number of passengers, though the conductor of the "Chicago Limited" informed the writer that they only averaged from 52 to 56 in number on that most luxurious and comfortable of trains.

In England, where great attention had been paid to the speed of the old Tally-Ho mail and stage coaches, enormous sums were spent in making the early railways as straight and level as possible, mainly in order to fit them for the speedy conveyance of passengers. Trains were soon run at such a pace that it became difficult to stop them when a stray freight happened to be standing on the main line, and several very serious collisions occurred, owing to the hand-brakes being unable to stop the trains in time. The widespread adoption of continuous brakes has removed this danger, and trains are run rather faster than ever before. Many English lines derive a great part of their income from competitive through passenger traffic, to obtain which the trains must be fast, as the average Englishman considers that speed is *the* primary requisite in railway traveling, and that well-lighted cars, warmed in winter and ventilated without draughts, are secondary considerations, and lavatories and saloons on the cars are unnecessary luxuries, while such innovations as sleeping, parlor and hotel cars "are really not required." This sort of feeling is gradually changing, and an assimilation between the American and English modes of travel is apparent to any railway man who has traveled in both countries. In America, travel being attended with nearly every possible comfort and luxury, trains are now being accelerated, and possibly shortly the fastest train in the world may be found on the western shores of the Atlantic. In England, trains being already run nearly as fast as is physically possible on a small and over-crowded island, many comforts well known in America are now being introduced. The Pullman Car Co. have sold their drawing-room cars to the Midland Railway Co., who will run them on their best trains as ordinary first-class cars without any extra charge. The Great Northern have introduced a dining car running between Leeds and London. Leaving the former city at 9 A. M., a business man can travel to London (186½ miles), spend 4 hours 40 minutes in that little village, and be back in Leeds at 10 P. M., eating his meals at his leisure en route. Pintsch's gas, which gives a good, cheap and singularly steady light, is becoming more used in both postal and passenger cars, and certainly seems an improvement on any form of oil lighting. N.

MR. ADAMS, at the Boston & Albany shops, at Allston, has a lot of passenger cars under way and will go on building, probably completing the present order with from 15 to 18 cars. These coaches are of the regular standard pattern of the road, and are similar in all respects to those described in our last issue. The shops are just turning out a lot of 30 palace stock cars. These are of the Lincoln pattern, intended to carry 16 cattle. They are 35 feet in length, and the feeding and watering are done on the road. There are eight buckets on each side of the car, which, when not in use, turn up out of the way. A tank is located on the top of each car which holds 125 gallons, a quantity sufficient to fill the buckets three times. There are two hay boxes on the top of the car, and openings closed by trap doors through which the hay can be thrown down to the cattle. The cars are mounted on suspension trucks. The shops, in addition to the new work, are keeping up the repairs both on freight and passenger cars.

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consinder of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notice of changes in railroad officers, organizations and names of companies.*

A STANDARD FREIGHT CAR TRUCK.

The existing need of a standard freight car truck, and the difficulty of determining just how such a truck should be constructed, are a forcible illustration of the progressive tendencies in railway practice. For years past the subject has been discussed by the members of the Car-Builders' Association, and attempts have been made to obtain from the experience of each individual member such information as would serve as a basis for some definite agreement as to the specific details of such a truck. The lapse of time, however, instead of narrowing the problem down and rendering it less complex, has developed new conditions which were not foreseen, apparently, during the earlier stages of the discussion; so that the practical attainment of what is so earnestly desired seems to be as far off as ever. Heretofore, it has been assumed that the weight of a freight car load, although in practice subject to some fluctuation, was nevertheless, as to its maximum limit, a kind of fixed quantity not likely to exceed 20 tons. An axle amply sufficient for such loads was agreed upon ten years ago, and as for the wheels, there was no necessity for any material increase in size or weight. Nothing remained to be done but to agree upon the other details, the material of the frame and the forms and proportions of the other parts of the structure, their arrangement, connections, etc. There was, as might have been expected, much diversity of opinion in reference to these details, and in order to see in what the diversity consisted the views of members were canvased by sending out a series of questions year after year to car-builders in charge of road shops, asking for specific replies and the reasons therefor as suggested by the experience of each. These questions usually embraced the following points: Whether the material of the truck frame should be of wood or iron, or a combination of both; whether the frame should be rigid or have a swing-bolster; what should be the form of side-bearings, and whether the whole weight should not be carried on the center-bearings; whether brakes should be hung to the car body or truck frame, or put between or outside the wheels; whether any bracing was necessary to keep the truck square; and sundry other things, including the size, form and arrangement of arch-bars. The answers to these queries showed a great difference of

opinion upon all these points, and although the circulars requested a statement of the reasons for the opinions expressed, it was but rarely that the request was complied with. The truth was that, without some satisfactory and decisive tests, conducted in a skillful and scientific manner, the reasons could not be known with sufficient precision to warrant a statement of them. The soundness of a mechanical theory cannot be demonstrated by mere weight of opinion or a preponderance of votes in its favor. There must be positive knowledge, and this can only be obtained by experimental scientific testing.

The movement in the direction of a standard freight truck has now reached a point when this kind of knowledge in respect to every element in the structure is absolutely necessary. Arch-bars are an essential part of most freight trucks now in use, and when their diversity of form, arrangement and bolt connections are considered, it is obvious that a great deal of it is little better than arbitrary guess-work, so far as the arranging of a given quantity of wrought-iron in a way to present the greatest resistance to certain strains is concerned. It would certainly seem that mechanical science, which has accomplished so much in other fields, and is spanning great rivers with cantilever and suspension bridges, ought to be able to settle this arch-bar question so there can no longer be two opinions about it. And so of every other part of the truck. But the difficulty appears to be in bringing mechanical science to bear upon the subject in a systematic way. So long as each road does its own experimenting in a loose, irregular and unscientific manner, as is apt to be the case, there will be, as heretofore, a great loss of money and time with no corresponding gain. A few years ago there was a good deal of talk about a mechanical laboratory to be established under railway auspices for dealing with questions of this kind, but without any practical result.

But, as we have already said, new conditions have been developed since the early agitation of the subject of a standard truck, which not only make the problem more difficult, but which will probably postpone its solution for a good while yet. We refer to the tendency everywhere to increase the loads and weights of freight cars to an extent that is so vague and undetermined that no future maximum can be fixed. It is obvious, however, that a limit of weight has already been reached, or soon will be, if the present tendency is not checked, when the whole construction of freight cars from rails to running-board, and especially the trucks, will have to be changed in order to carry the loads. Then there is the matter of train brakes for freight cars. Considering the numerous inventions of this kind that have been tried within the last few years with more or less success, it can hardly be expected that the clumsy hand-brake system will be exclusively relied upon a great while longer; and if not, then the standard truck will have to be designed with reference to the use of continuous or power brakes. Such a thing as a standard freight car truck is, in fact, a delusion, unless it can be designed so as to practically meet all the conditions and requirements with respect to the weight of loads to be carried, the improvements in brake appliances, and possibly other things in the progressive development of the railway system.

DEAD WEIGHT.

Ten years ago the subject of dead weight received a large share of attention at car-builders' meetings and was frequently discussed in railway journals, but of late very little, comparatively, has been said about it. The inference is that its importance in the economy of car construction has heretofore been considerably overrated, or else that it is not now receiving the attention it deserves. At all events, it is not so much of a bugbear as it once was, and mainly for the reason that its effect upon the cost of railway transportation is better understood than it was a few years ago. The term "dead weight" is commonly supposed to mean the weight of an entire train, engine and all, less the paying load. It has also been said that, strictly speaking, nothing can be considered dead weight that is in any way essential to the serviceableness of rolling stock, and that the term should therefore be restricted to such material in the construction as is actually superfluous. The point, then, to be determined is the line of separation between what is superfluous and what is not. This can only be done by a careful rejection of material that is only an encumbrance to the car, just as the sculptor rejects the marble that encumbers the statue. So long as this is not done there will be a divergency from the ideal line, especially in respect to passenger cars, which are more likely to be too heavy than too light. As regards freight cars, there is less danger of making them too heavy, provided the load they carry does not fall below the stenciled figures on the car side, or so long as a deficiency in the weight of some cars is made up by an excess in others over and above what is required by the painted figures.

As an illustration of the divergency which obtains in practice, from the ideal or true line of separation between what is superfluous and what is not, we will cite an example. Not long since a writer in a leading railway journal described two passenger cars, each built by different roads, giving dimensions, weight and seating capacity of both. Each car had the same kind of trucks and size of wheels, and the bodies were of the same width; but one of them was 57 feet long, seated 76 persons, and weighed 42,140 lbs., or 554 lbs. to each person, while the other was 55½ feet long, seated only 63 persons, and weighed 51,545 lbs., or 818 lbs. to each person, the shorter car weighing 9,396 lbs. more than the longer one, and seating 13 passengers less. Supposing each of these roads to have 20 passenger cars of these respective weights and dimensions, the engines of one road would haul in such case 187,920 lbs. or 94 tons more weight of cars than the engines of the other road, and at the same time 260 passengers less, if the seats were all filled and no standing room occupied. This excess of weight, which is equal to the weight of 4½ additional cars for the road owning the 20 lighter ones, would, at the rate of 76 passengers per car, enable that road to carry 342 more passengers, while the total dead weight would not exceed that of the 20 heavier cars of the other road. The revenue derived from the additional number of passengers carried would be very considerable, and would represent the difference between the light and heavy construction—other things, such as durability, current repairs, etc., being equal.

But, leaving the passenger element out of the problem, what would be the result on the basis of the cost of hauling dead weight alone? Let us suppose that each road is 60 miles long, and that each of the 20 cars makes an average of one round trip of 120 miles every day during a year of 313 days, the engines of one road hauling 94 tons more dead car weight than the engines of the other road. This would be $120 \times 94 = 11{,}280$ ton miles a day, and $11{,}280 \times 313 = 3{,}530{,}640$ ton miles a year. The estimated cost of hauling a ton of paying freight one mile on the principal trunk lines is about ¼ a cent. But just how the total operating expenses of the lines are divided between the freight and passenger traffic without involving a large amount of uncertainty, is not so clear. It is manifest that the total cost of operation must be the basis for ascertaining the cost of transporting a passenger or a ton of freight; and as the two branches of traffic, so far as weight is concerned, are unlike in kind, the total operating expenses must be divided between them in some way, arbitrary or otherwise, in order to arrive at any estimate that is even approximately correct. Assuming, however, that ¼ a cent is the actual cost of hauling a ton of paying freight one mile, and also that each car carries an amount of freight equal to its own weight and no more, it necessarily follows that the cost of hauling a ton of dead weight one mile, including engine, tender and cars, must be considerably less than ¼ a cent, inasmuch as the cost of hauling the entire train must be included in the cost of hauling the freight in order to determine at what rates the freight can be carried so as to realize a profit on the business. For this reason it will be safe to assume that if it only costs ¼ a cent to haul a ton of paying freight one mile the cost of hauling a ton of dead weight the same distance cannot be more than ¼ of a cent.

At this rate the cost of hauling the 94 tons excess of weight in the 20 heavy cars one year would be about $11,700, or the ton mileage divided by three, being $588 per car—a pretty heavy tax it would seem for building cars heavier than they need be, and, when considered with reference to all cars that are running on all the roads with more or less superfluous weight, the result in dollars and cents is something tremendous. So it appears, at least, on the face of the transaction. But the estimated loss is manifestly very much exaggerated, for the reason that a large proportion of the operating expenses of railroads, say 50 per cent., is entirely independent of the dead weight carried, while many other expenses are only partially affected by it; and yet these expenses must all be taken into account as a basis for determining the average cost of transporting a passenger or a ton of freight one mile, and this again is made the basis for figuring up the cost of dead weight, showing results that are clearly wide of the mark. It would be safe, we think, to reduce the above estimate of the cost of hauling the 94 tons of superfluous weight in the 20 cars, at least one-half. It really does cost something to transport unnecessary weight in cars, but not so much as is generally supposed, and there is no use in exaggerating the thing into a frightful bugbear, as is often done when dead weight is confounded with paying weight and no distinction made between them in estimating the cost of haulage. Nor is it right to assume, as is frequently the case, that for every ton of weight taken from the material which enters into the construction of a car, an additional ton of paying load can be carried—a theory which, if fully carried out, would result in the carrying of freight without any cars at all.

INACCURACY OF SPEED RECORDERS.

In our November issue attention was called to the inaccuracy of speed recorders caused by a difference in the diameters of wheels on the axles with which these devices are connected, and it was stated that trials had been made by coupling two or more caboose cars together, with recorders attached to each, and that the record of speed in such trials was not uniform.

We are informed by the General Agent of the Wythe Speed Recorder that the movement of that device is as positive as the revolutions of the axle to which it is connected, and that this absolutely prevents any variation; and, furthermore, that its accuracy has been tested by the running of ten cabooses, to each of which the recording apparatus was attached, a distance of forty miles, and that each instrument recorded exactly the same result. The agent also says that the wheels on all axles connected with the recorder are picked and calipered so as to insure uniformity in their diameters.

This doubtless secures approximate correctness in the pencil record made on the paper, although it is assumed that for every revolution of the axle the wheel, and consequently the car, make the same progress on the rails, or, in other words, that the revolution of the axle is an invariable index of the speed of the train. And so it would be if the wheels were always of uniform diameter, and always run on the same diameter of the coned tread. But practically this is not the case. The diameter of the wheels at the point of contact with the rail necessarily varies, and there is more or less slipping in passing curves and other inequalities of the track, the wheels running sometimes on their larger and sometimes on their smaller diameters, and consequently they do not get over precisely the same distance on the track at each revolution. It may be assumed, however, that the average distance made at each revolution will be approximately correct, or sufficiently so for the purposes designed. But it will hardly be asserted that when wheels are out of round, or ill-mated on the same axle, the correctness of the record will not be materially affected thereby. This is the point to which we desired to call attention in our previous article.

RAILWAY PASSENGER CARS IN ENGLAND AND THE UNITED STATES.

While there is not the least probability that compartment cars constructed after the English fashion will ever be used even to a limited extent on American roads, it is more than probable that our style of passenger cars will at no distant day become one of the permanent features of English and Continental roads. When the merits of the two systems are fairly weighed, the one with the other, it will of course be apparent that each has some special advantages that the other has not, and when a balance is struck it will also be apparent that the American system is by far the best. It is not surprising that innovations that are really improvements make such slow progress in English railway practice. The English people are constitutionally conservative and averse to radical changes. They stand aloof, not because the new thing is not any better than the old, but simply because it is new. To adopt it, except in some way so gradual as to be almost imperceptible, would be too severe a shock to established custom. This national trait was well illustrated a few years ago when the Midland Railway Company, the pioneer of progress in English car construction, put on its line some passenger coaches of the standard American pattern. The people came to the station, looked at them, and then went to their own coaches, leaving the new vehicles without occupants. Of course, they had to be taken off. This company about the same time took off all its second-class carriages and made those of the third class nearly as good as the second class on the other lines. For a time the second-class patrons of the road were in tribulation because they were forced to choose between the first and third class, but in time they got used to the new arrangement, and ultimately it was successful.

The source of the trouble seems to be not so much in the style and construction of cars as respects the comfort and convenience of travelers, as in the difficulty of maintaining traditional class distinctions in public conveyances which are equally accessible to everybody who buys a fare ticket. This common accessibility, and the desire at the same time to keep up distinctions incompatible with it, are the reasons for adhering so tenaciously to the compartment system, with the inconveniences inseparable therefrom. The carriages are practically the old stage coaches mounted on rails; and the three compartments, each seating eight persons, are only exclusive when one of them happens to contain that particular number of persons forming a party traveling together. When only seven are in the party the unoccupied seat must be paid for, or there is danger that an intruder may be thrust in and destroy the exclusiveness. But the perseverance and foresight of the Midland Company in the introduction of Pullman cars on its line bid fair to make some inroads on the old system that are not likely to be obliterated. The seed that was sown several years ago is germinating slowly, and one of these days we shall witness the perfected growth. It took a long time for the tramway horse-car system to gain a foothold in England upon city and suburban streets for the transportation of passengers. George Francis Train was the pioneer of the system. It was at first regarded with aversion, but the British mind in a dozen years or so ripened on the question, and street lines are now quite common in many of the larger cities of the Kingdom. The cars, however, are unnecessarily heavy and ponderous, but after a while they will be lightened up so as to conform more nearly with modern and more advanced usage.

The comparatively short distances traversed by English steam lines obviously do not require the same elaborate provision for the comfort of travelers that is next to indispensable on our own roads. But the necessity of bell-cords and a free communication at all times from one part of the train to another, thus breaking up the isolation of compartments separated by transverse partitions, is equally

obvious whether the continuous run is short or long. And the same may be said with respect to warmth, ventilation, and certain other conveniences favorable to health and comfort, the absence of which has for years made a journey on an English railway train a thing to be dreaded. Another convenience, too, that American travelers in England sorely miss, is a "conductor" of the Yankee sort, to pass through the train semi-occasionally and impart needed information—an official who is a great improvement on his English counterpart, the obsequious menial called the "guard" on the alert for gratuities. Imagine a New York Central passenger conductor doffing his hat to a lady after helping her off the car, and with the silent solicitation of his open palm awaiting the expected dime!

The progress of improvement in the car equipment of English colonial roads has been slow, but of late it has been more decided than on the home roads. In New South Wales American cars were introduced in 1877. Up to that time, and for a period of 25 years, miserable little composite cars were used, similar in their construction to the orthodox English carriages of the period, with roofs close to the heads of the passengers, and no ventilation. The first American cars sent there seated 56 passengers each, had two feet more air-space overhead, also a water-cooler and toilet conveniences, but no prison-like compartments. Since then there has been constant improvement in the style both of cars and engines, and it has been mainly in the direction of American practice and away from the characteristic conservatism of the mother country. The conditions which exist in comparatively new countries like Australia and the United States are of course somewhat different from those which exist in England, and these conditions affect railway practice more or less. There may be reasons for the methods peculiar to each, and such as are not based upon prejudice or a blind adherence to stale custom. Critical travelers from this side of the water, who have been accustomed to our spacious day-coaches, which always have people enough in them for mutual protection against burglars and lunatics, do not grumble about the permanent way, station-houses, etc., of English roads; but they do protest against being locked up in compartments and frozen to death in winter with hot-water cans. They complain, also of the absence of lavatories and retiring closets, and the system so universal on American roads of a "check" security for baggage. The stereotyped reason assigned, that the English people "prefer to have things so," is not a good reason, because it does not deal with the question on its merits.

In respect to accidents there are reasons why they are likely to be more frequent on our own than on English roads. The conditions here are more favorable. Our long and cheaply-constructed single tracks, passing through dense forests and vast tracts of unsettled territory, the almost entire absence of fencing, the danger from trestles, land-slides, falling rocks, malicious obstruction, and the like, all increase the liability to accident; and yet, all things considered, the aggregate of killed and injured in proportion to mileage is very much less in this country than in England, where such conditions do not exist.

THE WARMING OF STREET CARS.

This subject was discussed at the recent meeting of the American Street Railway Association, at Chicago, and the prevailing opinion appeared to be that the warming of street cars was a matter of very questionable expediency. It cannot be denied that some of the reasons urged against the practice were plausible if not forcible. There are practically two sides to the question, however, and in the discussion alluded to the subject was considered mainly from the standpoint of the street line companies and with reference to their own interests as dividend-paying corporations. It may be, as was alleged by one of the speakers, that the opinions of the great mass of people who travel on street cars are very much divided on the subject; but so far as we can learn this does not appear to be the case where the experiment has been tried to any extent. In Brooklyn, where street cars are almost the only means of transit for a vast population through the long avenues reaching from the ferries to the distant suburbs and intermediate points, the use of stoves in the cars has become almost universal. They were first introduced about three years ago, and are now on all the cars of the principal lines. If there is any dissatisfaction on the part of the public it is so slight as to find no public expression. There can be little doubt, however, that if the stoves were to be taken out of the cars there would be a general protest against it.

The stoves used are of a neat cylindrical pattern, placed centrally on one side, and occupying, with its surroundings, only the space allotted to one passenger. The pipe runs through the roof, and the stove itself is encased on each side and at the back with galvanized sheet iron. Outside of this, on the sides, is a handsome wood partition, which protects those sitting in contact with it from any uncomfortable heat. Coal is used for fuel, and the fire is replenished at the end of each trip. There is no litter of ashes in the car, nor that worse abomination, loose straw, to remind decent people of a stable, and make it next to impossible to recover a dime or a nickel in case one is accidentally dropped. Extra slatted floors are used, the sections of which can be easily removed for cleaning or for finding lost money. There is no trouble about ventilation. If the car is too warm it is only necessary to open the roof ventilators and the heated air rushes out like gas from a balloon, carrying the accumulated impurities along with it in case the car is crowded. In wet or damp weather the moisture is neutralized and the car kept drier, and of course more comfortable for the occupants. The only trouble experienced is in adapting the fire in the stoves to the varying outside temperature, so the passengers will not be too warm in moderate winter weather nor too cold when the weather is severe. But this difficulty is not a serious one, and can be avoided to a great extent by careful attention to the fires.

While the warming of street cars is so general and so much liked in Brooklyn, there is not, so far as we know, a single car with a warming apparatus in it on any of the surface street lines in New York. Whether this is owing to the indifference of the companies to the comfort of their patrons, or whether it is because New Yorkers are less sensitive to the rigors of winter, we can not say. The phenomenon is all the more singular from the fact that a vast number of the people of each city travel on the street cars of the other; and the further fact that nobody complains because the cars of the elevated roads are nicely warmed, although during certain hours of the day they are crowded to their full capacity, and always run three or four times as fast as the fireless slow-moving horse cars that frequently have to stand still five or ten minutes when the track is obstructed.

LARGE WHEELS.

When 42-inch wheels were first used in this country under passenger cars there was a good deal of fruitless discussion about their utility as compared with that of smaller wheels. What discussion failed to make clear, however, has been determined by use and the knowledge thereby obtained. Much can now be said in favor of large wheels, showing their superiority to small ones for passenger service, that could not have been said with the same confidence a few years ago. English practice could, of course, be referred to as being conclusive, so far as the style of "carriages" on English roads was concerned. But our cars are altogether different in size, weight and construction. Probably no road in this country has given 42-inch wheels a more thorough trial than the Boston & Albany, and we are informed that with these wheels such a thing as hot journals is practically unknown on that road, none having been reported for a long time. This is attributed to the fact that the journals revolve slower, their surface speed with the 42-inch wheels at 40 miles an hour being no greater than that of journals with 33-inch wheels at 31 miles an hour. This is a moderate speed if the journals are well packed, and they ought therefore to run cool. It is also asserted that passengers perceive a difference in the riding of cars having the larger or smaller wheels, and that they prefer those with the large ones. This is significant, if not conclusive. But there is still another thing that many observing people have noticed, and that is, that large wheel trains appear to move at a comparatively moderate speed, when the distance covered shows a speed of 40 and 45 miles an hour.

RAILWAY BRIDGE INSPECTION.

Bridges, like car wheels, do not break down without showing signs of weakness long in advance. Careful inspection of wheels at frequent intervals has enabled railways in this country to practically eliminate "broken wheels" from among the causes of accidents, at least those of a serious nature. A bridge failure is admittedly of a much more dangerous character than one resulting from a broken wheel. It would be expected, therefore, that bridges would be much more carefully looked after than wheels; yet on some roads, even in the vicinity of New York faulty and dangerous structures of this class have been allowed to stand on main lines for the last five years. Nominally, these bridges have been inspected, and probably the flaws have been reported; but so long as no attention is paid to the defects the inspection is a farce. A dangerous wheel on the same road, if allowed to run under a passenger car, would cause the instant dismissal of whoever allowed the car to proceed, knowing that it was defective.

If the true, or inside, history of many bridge accidents could be written, it would be found that numerous warnings had been given and disregarded. The condition of the structures had not been hidden from the officers, and had been continued long after they had passed the point where danger was imminent at each passage of a train.

One of the bridges alluded to as having been a long time defective showed its first sign of weakness by the cracking of a cast-iron member. This crack has been slowly enlarging. Another member, through a mistake in placing the braces, is relieved from its proper load under certain conditions, and has been slowly rotating about its horizontal axis. At any moment, however, it is liable to experience a heavier shock or stress than usual, and turn over completely or break from the application of a strain in a manner not contemplated by the designer. These facts have been known to the officers of the road for a long time. Attention has been called to this particular bridge, not only by their own inspectors, but by outside engineers.

It is hardly necessary to add that engineers do not generally believe that bridges, roof trusses, buildings or boilers fail from weakness or decay that could not have been discovered by proper examination. Mysterious causes are no longer admitted by engineers of repute to have a place in engineering science. However, the inevitable conclusion is that failures of all kinds of engineering structures may be anticipated and prevented by taking proper precautions.

IT is announced in the last number of the *Railroad Gazette* that Mr. M. N. Forney will retire from the editorial management and the ownership of that paper on the 1st of January, 1884. Mr. Forney first became connected with the *Gazette* in 1870, and retires now, after thirteen years of arduous service, for much needed rest and the recuperation of his health.

OUR November issue contained an illustration of an Emigrant Sleeping Car of the Union Pacific road, the designing of which was credited to Mr. I. H. Congdon, the Superintendent of Motive Power of the road. From information received since then we are inclined to think we were in error in giving Mr. Congdon the exclusive credit for the design of these cars. We overlooked the fact at the time, that cars of this class had been in use on the Central Pacific road since 1879, and we are now informed on good authority that these cars were designed and built at the shops of that road in San Francisco, and are in their internal arrangement and in all general features identical with the one shown in the November CAR-BUILDER. And we are furthermore informed that these sleeping cars have proved to be all that was anticipated in the matter of promoting the comfort and convenience of emigrant passengers, that other roads have been furnished with plans and specifications for the building of them, and that one of the completed cars was sent to the Union Pacific road for inspection.

IT has been noticed by car-builders that from some cause not very apparent, the bodies of passenger cars do not always have a satisfactory motion on the trucks, although the springs are furnished, and have been carefully tested, by the best makers. The cause of the trouble has in one instance, at least, been traced to the fact that the equalizing springs and the elliptics in the same car, having been furnished by different makers, had been tested as to their required capacity by different testing apparatus, the result being a lack of harmony in the concurrent action of the two sets of springs. The difficulty was remedied by the makers of the elliptics furnishing a set of spirals that were tested by the same machine or tester that the elliptics were, thus causing the two sets to work harmoniously. We do not suppose that as a general thing there is such a difference as is here indicated in the testing appliances used by different spring manufacturers. Equalizing and bolster springs are often furnished by different makers for the same cars, with no apparently inharmonious action to affect the easy riding of them.

THE regular meeting of the New England Railroad Club was held in Boston, Dec. 12. There was a discussion on the subject of bar iron as used in passenger equipment. Mr. J. N. Lauder, of the Old Colony road was appointed a committee to ascertain the cost of establishing a laboratory in connection with the Club, where material can be tested, the expense of the same to be paid by the roads interested. The next meeting will be held on Wednesday, Jan. 30. The subject to be considered is not yet announced.

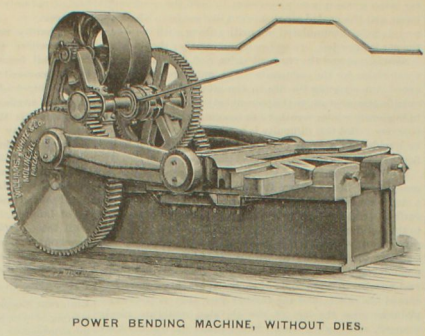
The Industrial Review, a monthly journal of industrial progress heretofore published in Philadelphia, will in future be published in New York. The first number was issued in January, 1882, since which time it has won a well deserved reputation as an able and well conducted journal of its class. Arrangements have been made by the publishers to render its future issues even more attractive than those of the past year as a record of industrial progress and the development of American energy and enterprise, especially at the South.

A TREATISE ON CRANES.—The Yale & Towne Manufacturing Co., of Stamford, Conn., have just issued a catalogue of their cranes, which will be found very useful by our readers, especially those having heavy weights to lift and transport. The cranes, pulleys, overhead tramways and other apparatus for handling loads, embrace almost every variety now used, and the catalogue deserves to be preserved simply for convenience of reference.

Mr. Henry R. Towne has just finished a work entitled "A Treatise on Cranes," which the company has published, and which is a most valuable contribution to the literature pertaining to the subject of handling heavy weights, moving materials and handling work in the shops. No one who has large shops to manage can read this work without gaining valuable ideas in regard to the best, quickest and most economical methods of handling work. Although the work is ostensibly devoted to a description of the cranes and hoisting apparatus made by the company, yet the subject is so broadly treated, general principles on are carefully and conscientiously discussed, as to make the work a standard in its way. The illustrations are of the very best and illustrate all the details of construction, as well as general arrangements of both the cranes and other hoisting apparatus. Many of the larger illustrations

are especially valuable, as they suggest ways in which cranes, trolleys, etc., can be used to meet especial cases where a great deal of study and thought have been expended in devising special forms for the purpose, or modifying existing apparatus so that it will do the work. The book, in fact, gives one a clear and comprehensive view of almost every notable application of cranes, traveling bridge cranes and overhead tracks that has been made in the country. What adds to the value of this feature is the fact that Mr. Towne gives in connection with each application a fair discussion of its advantages and the reason for its adoption, as well as in regard to the positions to which it is best suited. There are some very good designs given for blacksmith shop cranes, and also for special cranes to handle work for axle lathes and wheel-boring machines. Many of these devices are in use in railway shops, and it seems their use is spreading very rapidly.

The book is the only American treatise on the subject. It contains 190 pages and upward of 80 illustrations, and can be had by addressing the company as above.



POWER BENDING MACHINE, WITHOUT DIES.

WE like to say a good word for a contemporary, especially when it is so well deserved and withal so little needed as in the case of the *American Machinist*. It is strictly a class journal confining itself to its own specialty and containing nothing that is not of immediate practical interest to the progressive machinist. In this mechanical age the inventors, builders and users of machinery are in need of just such a paper to keep them advised of what is going on and prevent them from getting rusty. With a paper conducted as this one has been from the start, success was a foregone conclusion. There has been no halting to the growth of its subscription list, and in order to reciprocate the good will of its patrons and still further extend its usefulness the price has been reduced from $3 to $2.50 a year, or from six cents a copy to five cents.

EALY'S "BLUE BOOK." Special Credits: Containing a classified list of over 150,000 names of manufacturers and dealers in hardware, iron, machinery, agricultural implements; railway, machinists', engine and boiler makers' supplies; wagon and carriage makers' brass goods, plumbers' and gas fitters' supplies; stoves, tin, cutlery, guns, and the workers in iron and metals generally in the United States and Canada. January 1884. Published January and July by The John W. Ealy Co., 51 Chambers street, New York, and 79 Dearborn street, Chicago. pp. 592.

The present volume is the twelfth of the series and is twice as large as the previous issues. In connection with the publication of this work the company have established a "Banking Collections Department," which is of the nature of a clearing house for past due claims. The delay or refusal of delinquents to pay promptly is reported to the entire trade, a knowledge of which has the effect of greatly facilitating collections.

THE works of the Hoyt & Brother Manufacturing Co., at Aurora, Ill., for the manufacture of wood-working machinery and outfits for a variety of mills, shops and factories, are said to be the most complete of their kind in the United States. The machinery is driven by water-power, and all the lifting, both in the manufacture and setting up of the heavy machines they build, is done by overhead "travelers." The specialty of their manufacture is planing-mill machinery. Their planing and matching machines, and double and single surfacers, are not surpassed by any others for durability, reliability and the amount of work they are capable of turning out. They have been in use for many years at the shops of the C. B. & Q. road, at Aurora, and well sustain their reputation. The company have as much as they can do to keep up with their orders, and are making arrangements for a large increase of their present facilities.

ISAACS' LOCOMOTIVE FLANGED TRACK BROOMS.—These brooms are manufactured by the Phenix Steel Wire & Brush Co., of Chicago, successors of M. C. Isaacs & Co. They are made of steel wire, with the brush part fitted to the rail so as to sweep the top and sides. They are usually attached just behind or between the truck wheels, and are very effective in clearing the track of snow, ice or other light obstructions, the material of which they are made being found far more durable than any other that has ever been used for the purpose. The extent to which they are used on a large number of roads is the best evidence of their utility, and as this is the season when they are most serviceable, we would suggest that all roads that have not given them a trial will find it to their interest to do so. We are informed by the manufacturers that their orders have steadily increased since the company was organized, and that thus far during the present winter they are larger than they have been in any previous season.

THE Niles Tool Works, of Hamilton, O., have opened a branch office at 153 Lake street, Chicago, under the management of Mr. W. P. Douglas and Mr. John R. Williams. A large quantity of the tools and machinery of the company's own manufacture will be kept in stock at the branch office, also the product of several other well-known firms, including the Morgan Engineering Co., of Alliance, O., and the Gordon & Maxwell Co., of Hamilton, O., for whom the Niles Tool Works will act as sole representatives in the West.

THE firm of Lewis & Fowler, late manufacturers of the improved "Alarm" Passenger Registers, Brooklyn, N. Y., has been dissolved. The business will be continued by the newly organized Lewis & Fowler Manufacturing Company, who will continue to supply the registers to street railway companies upon the same liberal basis of "no royalty" as heretofore.

THE Drummond Manufacturing Co., of Louisville, Ky., have been awarded a gold medal by the Amsterdam International Exposition for the Aiken & Drummond machinery for forming molds in sand for metal castings. A bronze medal was also awarded to the exhibitors of the same machinery at Paris in 1878, and a gold medal by the Southern Exposition, at Louisville, last August.

The purpose of this machine is to form and bend iron or steel to shapes rapidly and accurately, so as to produce duplicate parts that will go together without delay in fitting. Dies are attached for forming arch-bars for freight car trucks, and work of a similar kind. The machine takes the place of a drop-press, and does with a slow motion what the drop-press does with a sudden blow, thus causing the metal to change its shape more slowly and with less liability to crack. Upsetting, punching and shearing are also done on the machine, which is in fact a compact and very powerful press, very useful in car shops, rolling mills, etc. Manufactured by Williams, White & Co., Moline, Ill.

THE Colliau Furnace Co., of Detroit, has in hand an order from the New York, West Shore & Buffalo road for two of its largest size cupolas for the shops of the road at Frankford, N. Y.

THE Southern Car Works, at Knoxville, Tenn., are busy on the last 100 box-cars of the 500 ordered by the East Tennessee, Virginia & Georgia road.

THE Wason Car and Foundry Co. at Chattanooga, Tenn., are engaged on a lot of coal bottom dumping cars for the Woodward Coal Company. They are also building a lot of cabooses for the Alabama Great Southern Railroad, and have orders on hand for a large number of coal cars for the New Orleans & Northeastern Railroad.

MESSRS. MURPHY & COMPANY, varnish manufacturers, of Newark, N. J., have published a little brochure pamphlet entitled "The Delights of Coaching," the merits of which, from an artistic point of view, cannot be adequately described in a mere notice. It is really a gem of art, both in respect to the illustrations and letter press. There are several full-page etchings made by Mr. Stephen James Ferris, the well-known painter and etcher of Philadelphia. The cover and designs for the initial letters are by Mr. Francis Lathrop, whose skill and taste in decoration are a conspicuous feature in many palatial private residences, and also in the new Metropolitan Opera-House of New York. These exquisite illustrations are worthy of a careful examination, and the book itself, in its general design and make-up, is a progressive step in publications of this class that merits wide appreciation.

THE Paige Car Wheel Co., of Cleveland, O., have issued a descriptive circular containing a list of the names of 45 roads and two car companies that are now using Paige's wrought metal wheels.

MR. BARTHOLD BERNHEIM, lately representing in Philadelphia the Tin Plate and Metal houses of Naylor, Benzon & Co., London, and Naylor & Co., New York and Boston, has been admitted a member of the firm of Merchant & Co., of Philadelphia.

THE official report of the proceedings of the annual meeting of the Master Car-Builders' Association, held in Chicago in June last, will be ready for delivery in a few days.

MR. J. H. RAYMOND has resigned his position as Secretary of the Western Railroad Association, after ten years of service. Mr. Raymond has associated with himself Mr. P. H. T. Mason, and will hereafter devote his attention to legal business.

A CORRESPONDENT of the New York *Sun* having stated that two locomotives with driving-wheels 8 feet in diameter were once used on the Camden & Amboy Railroad, and that these were the largest driving-wheels ever made in this country; another correspondent of the same paper claimed from personal knowledge that the wheels in question were 9 feet in diameter instead of 8. The engines having been built by the old Norris Works, of Philadelphia, the matter was referred to Mr. H. L. Norris, Jr., of that city, who furnishes the following extract from the records of the works:

"From April, 1848, to MAY, 1853, seven engines were built for the Camden & Amboy Railroad Company by Norris Brothers and Richard Norris & Son, on orders and plans of Mr. E. A. Stevens—Nos. 28, 29, 30, 31, 32, 37 and 38. Excepting No. 37, which had seven-feet driving wheels, they had each two eight-feet drivers, which was the largest size driving-wheel made at the Norris Works."

INDIA RUBBER sidewalks are coming into fashion out West. Their chief advantage is that as the town grows larger they can be stretched out toward the suburbs.

"FELLOW-TRABLERS," said a colored preacher, "ef I had been eatin' dried apples for a week, an' den took to drinkin for a month, I couldn't feel more swell'd up dan I am dis minnit wid pride an' wanity at seein' such full 'tendence har dis evenin'."

"How shall I advertise?" asked a timid merchant of his more enterprising neighbor. "How? why, *Advertise*—do it, go it, make a break—you are not advertising while you are asking 'how,' and while you ask how, somebody else is taking in the custom. *Start*—that is the main point; you will soon get into doing it the right way; while if you act as some folks do, and ask 'how' to-day and 'how' to-morrow, and keep on asking to the end of your days, you will never advertise at all, and very likely never be worth a cent."

Our Directory.

We note the following changes since our last issue. Our readers will do us a great favor by giving us prompt notice of any changes that may come to their knowledge, or of any errors that may be noticed in our list:

Atchison, Topeka & Santa Fe.—F. B. Woodruff has been appointed Division Master Mechanic at Las Vegas, N. M., vice L. H. Waugh, who has accepted a similar position on the Sonora Railway.

Baltimore & Delaware Bay.—This road is the successor of the Kent County road. Frederick Gerker is General Manager.

Brunswick & Western.—W. R. Kline has been appointed Master Mechanic, vice William McCandless, resigned.

Buffalo, New York & Philadelphia.—P. G. Dwyer, late Train-Master, has been appointed Superintendent of the Buffalo Division, in place of J. T. Gardner, who has gone to the Rochester & Pittsburgh road.

Burlington & Northwestern.—John T. Gerry has resigned as Superintendent and Chief Engineer, to accept a position on the Texas & St. Louis.

Central of Georgia.—T. F. Warwick has been appointed Master Mechanic of this road at Augusta, Ga.

Chicago & Northwestern.—C. C. Wheeler has been appointed General Superintendent in place of J. D. Layng, resigned. Edward J. Cuyler succeeds C. D. Gorham as Superintendent of Wisconsin Division.

Danbury & Norwalk.—L. W. Sandiforth has resigned his position as Superintendent.

Denver & Rio Grande.—W. W. Borst has been appointed Superintendent of the First Division in place of W. H. Bancroft, transferred to the Utah Division.

Georgia Pacific.—J. G. Foreacre has resigned the position of General Superintendent.

Hannibal & St. Joseph.—W. R. Woodard has resigned as Superintendent to accept the position of General Manager of the Texas & St. Louis, and T. L. Dunn has been appointed Acting Superintendent.

Lake Shore & Michigan Southern.—G. W. Stevens has been appointed General Master Mechanic in place of James Sedgley, who retires from service after filling the position for many years.

Little Rock & Fort Smith.—F. Hufsmith has been appointed Master Mechanic and Master Car-Builder, with office at Argenta, Ark. He also fills some positions on Little Rock, Mississipp & Texas Railway.

Louisville, Evansville & St. Louis.—Geo. N. Sceets has been appointed Master Mechanic, vice E. M. Mast, resigned.

Michigan & Ohio.—D. J. Durrell has been appointed Master Mechanic, with office at Marshall, Mich.

New York & New England.—Enos H. Tucker has been appointed Superintendent of the Woonsocket Division.

New York, West Shore & Buffalo.—Charles Paine has resigned his position as General Manager on account of ill health. The road is now divided into three Divisions, as follows: Southern Division, from Jersey City to Albany, C. W. Bradley, Superintendent, office in New York; Mohawk Division, from Coeymans Junction to Syracuse, H. W. Garner, Superintendent, with office in Syracuse; Buffalo Division, from Syracuse to Buffalo, F. E. Merrill, Superintendent, with office in Buffalo.

Old Colony.—James N. Lauder has been appointed Superintendent of Motive Power. Mr. Lauder has been for some time Superintendent of Rolling Stock on the Mexican Central. Geo. W. Reynolds has resigned the position of Master Mechanic of the Northern Division. J. K. Taylor has also resigned as Master Mechanic of the road.

Sinaloa & Durango.—John E. Bell has been appointed Master Mechanic in place of W. P. Dutton, deceased.

Texas Transk.—Hugh Irwin, of Marshall, Tex., has been appointed Superintendent.

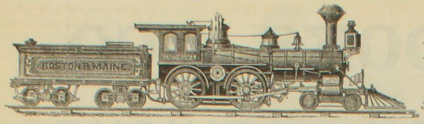
Texas & St. Louis.—W. R. Woodard has been appointed General Manager in place of George W. Ristine, resigned.

Virginia & Truckee.—M. M. Hyde has been appointed Master Car-Builder in place of B. W. Lyon, resigned. Hume Yerrington has been appointed Purchasing Agent.

Employment.

WANTED.—To correspond with railway officials or influential parties with capital, relative to the introduction of a New Device for Heating Railway Cars. The device is a practical one and embodies a new principle. Address "MAN," P. O. Box 516 Richwood, Union County, Ohio.

WANTED—A position as Master Car-Builder or General Foreman of a Railroad Car Department, by a man who has held same positions for fifteen years, and can give the best references as to capacity. Is thoroughly familiar with all kinds of Passenger and Freight Car work. Address "A," office of NATIONAL CAR-BUILDER.



MANCHESTER LOCOMOTIVE WORKS,

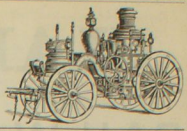
MANUFACTURERS OF

LOCOMOTIVES,

AND THE

AMOSKEAG STEAM FIRE-ENGINE.

JOHN A. BURNHAM, President. WM. G. MEANS, Treas., Boston, Mass.
ARETAS BLOOD, Agent, Manchester, N. H.



HINKLEY LOCOMOTIVE COMPANY,

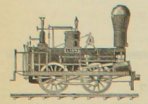
BOSTON, MASS.,

MANUFACTURERS OF

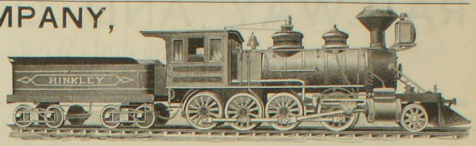
LOCOMOTIVE ENGINES

FOR ALL GAUGES.

Best workmanship and interchangeability of parts guaranteed.



LION, 10 TONS, HINKLEY, 1839. GREELY S. CURTIS, Treas. FRANKLIN D. CHILD, Supt.



CONSOLIDATION, 52 TONS, HINKLEY LOCOMOTIVE COMPANY, 1882.

ESTABLISHED 1831.

BALDWIN LOCOMOTIVE WORKS,

PHILADELPHIA, PA.

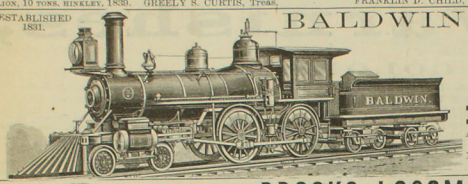
BURNHAM, PARRY, WILLIAMS & CO., PROPRIETORS,

GEO. BURNHAM, CHAS. T. PARRY, EDWARD H. WILLIAMS, } MANUFACTURERS OF { WM. P. HENSZEY, EDW. LONGSTRETH, JOHN H. CONVERSE.

LOCOMOTIVE ENGINES, CAPACITY 600.

Adapted to every variety of service, and built accurately to standard gauges and templates. Like parts o different engines of same class perfectly interchangeable.

Passenger and Freight Locomotives, Mine Locomotives, Narrow Gauge Locomotives, Steam Street Cars, etc. Illustrated Catalogues furnished on application of customers. All work thoroughly guaranteed.



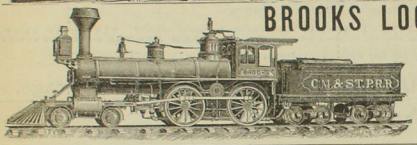
BROOKS LOCOMOTIVE WORKS,

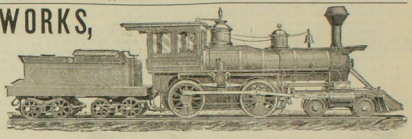
DUNKIRK, N. Y.

Orders Solicited for Locomotives Adapted for Every Class of Railway Service.

H. G. BROOKS, Pres't and Supt.

M. L. HINMAN, Sec'y and Treas.





ROGERS LOCOMOTIVE AND MACHINE WORKS,

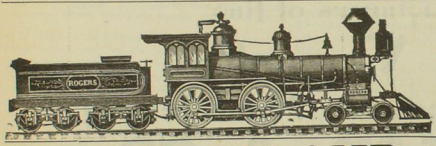
PATERSON, N. J.

New York Office, 44 Exchange Place.

Manufacturers of Locomotive Engines and Tenders and other Railroad Machinery

J. S. ROGERS, President. R. S. HUGHES, Secretary. WM. S. HUDSON, Sup't. } PATERSON, N. J.

R. S. HUGHES, Treas., 44 Exchange Place, New York.



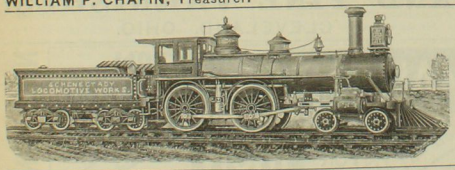
RHODE ISLAND LOCOMOTIVE WORKS,

PROVIDENCE, RHODE ISLAND.

EARL PHILIP MASON, Vice-President. WILLIAM P. CHAPIN, Treasurer.

CHARLES FELIX MASON, President.

ARTHUR LIVINGSTON MASON, Secretary WILLIAM H. FENNER, Jr., Agent.

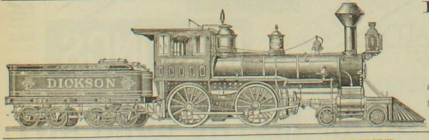


SCHENECTADY LOCOMOTIVE WORKS.

CHAS. G. ELLIS, President. EDWARD ELLIS, Treasurer.

WALTER McQUEEN, Vice-President.

SCHENECTADY, N. Y.



DICKSON MANUFACTURING CO.

Scranton and Wilkes-Barre, Pa.,

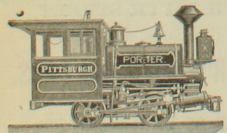
MANUFACTURERS OF

LOCOMOTIVES FOR EVERY KIND OF SERVICE.

The different classes constructed according to standard gauges and templets, so that like parts are interchangeable and may be ordered by number.

MINING, HOISTING and PUMPING MACHINERY a specialty. Car Wheels, Forgings, and Machinery of all kinds. Specifications and plans furnished on application. General Office, Scranton, Pa.

H. M. BOIES, President. JAS. P. DICKSON, Vice-President. E. D. LEAVITT, Jr., M. E., Cambridgeport, Mass., Consulting Engineer. WM. H. PERKINS, Sec'y and Treas.



FOUR-WHEEL-CONNECTED TANK LOCOMOTIVE.

H. K. PORTER & CO.,

PITTSBURGH PA.

LOGGING LOCOMOTIVE

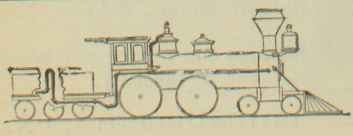
Builders of all Kinds of

LIGHT

Locomotives.

Send for Catalogue.

SHIFTING LOCOMOTIVE.



THE ASHTON VALVE COMPANY,

271 Franklin Street, Boston, Mass.

The Ashton Blow-back Safety-valve is constructed so as to conduct the escape steam which is blown off back o the leader, or to the smoke-box and up the chimney. By this arrangement the heat of the escape steam, instead of being wasted as it is when an ordinary safety-valve blows off, is communicated to the cold water in the tender. This not only results in an important economy, but it renders the escaping steam noiseless, and the increase of temperature of the water h' a a tendency to deposit some of its impurities before it is pumped into the boiler. It thus *stops the noise ; saves fuel ; and oh, engines steam better and faster, and do more effective work with these valves* than with those in ordinary use.

DIRECTORY

of the Railroads of the United States and Canada, showing the gauge, length of road, number of locomotives and number of cars; and giving the names and titles of their principal officers in charge of the operating, purchasing and rolling stock departments.

A

Adirondack R. R. 4-8½ gauge 60 m. 3 lo. 62 cars.
C. E. Durkee, Supt....Saratoga, N. Y.
Jacob Myers, M. M....Saratoga, N. Y.
Jas. J. Traver, M. C. B....Saratoga, N. Y.
Addison & Northern Penn'a Ry. 3 g. 46 m. 5 lo. 50 c.
F. M. Baker, Gen. Supt....Addison, N. Y.
Alabama Great So'n R. R. (See Cin., N. O. & T. P.)
Albany & Susquehanna R. R. (See D. & H. Canal Co.)
Albemarle & Raleigh R. R. 4-8½ g. 33 m. 3 lo. 35 c.
Jas. H. Petty, Gen. Supt....Tarboro, N. C.
Albert Ry. 4-8½ g. 51 m. 3 lo. 35 cars.
G. A. Robinson, Man. & Pur. Agt. Hillsboro, N. B.
Jas. McKay, M. M. & C. B....Hillsboro, N. B.
Alexandria & Fredericksburg Ry. (See Penna. R. R.;
Alexandria & Washington R. R. (7) Div.
Allegheny Valley R. R. 4-9 g. 259 m. 70 lo. 2202 c.
David McCargo, Gen. Supt. & Pur. Agt.; and
C. B. Price, Supt. (Riv. Div.)....Pittsburg, Pa.
A. A. Jackson, Supt. (L.G. Div.), Reynoldsville, Pa.
Geo. W. Glass, M. M....Verona, Pa.
R. Gunning, M. C. B....Verona, Pa.
Alliance, Niles & Ashtabula R. R. (See Penna. Co.)
Annapolis & Elk Ridge R. R. 4-8½ g. 20 m. 4 lo. 29 c.
W. H. Bians, Supt. & Pur. Agt..Annapolis, Md.
John L. Beall, M. Mach....Annapolis, Md.
Antwerp & Paulding R. R. 4-8½ g. 6 m. 4 lo. 63 c.
E. C. Munson, Gen. Man....Antwerp, O.
William Fitzsimmons, Jr., Pur. Agt. Antwerp, O.
Arkansas Midland R. R. 3-6 g. 63 m. 4 lo. 45 cars.
A. H. Johnson, Pr. & Gen. Man...Helena, Ark.
J. B. Johnson, M. M. & M. C. B...Helena, Ark.
Asheville & Spartanburg R. R. 5 g. 49 m. 2 lo. 12 c.
Jas. Anderson, Supt. & Pur. Agt..Spart'b'g, S.C.
Wm. Platt, M. M....Spartanburg, S. C.
W. B. Brown, M. C. B....Spartanburg, S. C.
Ashland Coal & Iron Ry. 4-8½ g. 22 m. 7 lo. 432 c.
Douglas Putnam, Jr., Gen. Supt..Ashland, Ky.
Robt. Peebles, Pur. Agt....Ashland, Ky.
E. M. Roberts, M. M....Ashland, Ky.
Ashtabula & Pittsburgh Ry. (See Penna. Co.)
Atchison, Topeka & Santa Fé R. R.
4-8½ g. 2,620 m. 348 lo. 9,629 cars.
A. A. Robinson, Gen. Man....Topeka, Kan.
Geo. B. Harris, Gen. Man. Asst...Topeka, Kan.
Gen. Supt....Topeka, Kan.
Geo. Hargraves, Pur. Agt....Topeka, Kan.
Geo. Hackney, Supt. Lo. & Car. Dept. do.
Clem. Hackney, Asst. Sup. L. & C. Dept. do.
Eastern Div.: D. J. Chase, Supt....Topeka, Kan.
Henry Hull, G. F. Car Dept....Topeka, Kan.
John Fagan, M. M....Atchison, Kan.
J. M. Smith, M. M....Kansas City, Mo.
Alfred Taylor, M. M....Emporia, Kan.
Mid. Div.: H. R. Nickerson, Supt. Nickerson, Kan.
W. Y. Johnson, M. M....Nickerson, Kan.
J. Q. Adams, M. M....Dodge, Kan.
W. Div.: D. H. Rhodes, Supt....La Junta, Col.
A. C. Stiles, M. M....La Junta, Col.
D. H. Dotterer, M. M....Raton, N. M.
So. Div.: Geo. L. Sands, Supt....Las Vegas, N.M.
F. B. Woodruff, M. M....Las Vegas, N. M.
J. H. Holman, M. M....Wallace, N. M.
J. W. Sager, M. M....San Marcial, N. M.
H. P. Olcott, M. M....Deming, N. M.
Sonora Div.: 265 m.
L. H. Waugh, M. M....Guaymas, Mex.
Kan. Cy., Law. & So. Kan.
4-8½ g. 399 m. 24 lo. 787 c.
J. L. Barnes, Supt....Lawrence, Kan.
T. D. Volk, M. M....Ottawa, Kan.
Atlanta & West Point R. R. (See Western of Ala.)
Atlantic & North Carolina R. R. (See Midland; N. C.)
Atlantic, Tenn. & Ohio R.R. (See Rich. & Dan.; (2) Div.)
Atlantic & Pacific R. R. 4-8½ g. 575 m.
F. W. Smith, G. Supt....Albuquerque, N.M.
A. West, Pur. Agt....Chicago, Ill.
Geo. Chalender, Supt. M. P. & M., and
Geo. Chalender, Div. Supt..Albuquerque, N. M.
D. Hardy, Div. Supt....Williams, Ariz.
Augusta & Knoxville R. R. (See Port Royal & Aug.)
Austin & Northwestern R. R. 3 g. 60 m. 4 lo. 86 c.
H. W. McNeill, Gen. Man....Austin, Tex.

B

Bachman Valley R. R. (See Han. Junc., Han. & Gett.)
Balt. & Delaware Bay R. R. 4-8½ g. 50 m. 2 lo. 13 c.
Fred Gerker, Gen. M. & P. A. Chestertown, Md.
Baltimore & Hanover R. R. (See H. J., H. & G.)
Baltimore & Ohio R. R.
4-8½ g. 1,612 m. 571 lo. 15,897 cars.
S. Spencer, 2d V. P. & Gen. Man. Baltimore, Md.
N. S. Hill, Pur. Agt....Baltimore, Md.
E. Ohio Riv. Div. 4-8½ g. 972 m.
W. M. Clements, Mast. Trans...Baltimore, Md.
A. J. Cromwell, Act. M. of M...Baltimore, Md.
L. Packard, M. C. B....Baltimore, Md.
I. N. Kalbaugh, M. M....Baltimore, Md.
Wm. Edwards, M. M...Martinsburg, W. Va.
Sam. Houston, M. M....Piedmont, W. Va.
Robert Maxwell, M. M....Cumberland, Md.
S. B. Crawford, M. M....Grafton, W. Va.
Alex. Laird, M. M....Parkersburg, W. Va.
Chas. Hirsch, M. M....Wheeling, W. Va.
Pitts. Div.: T. M. King, Gen. Supt...Pittsburg, Pa.
J. E. Sampsell, Ast. M. of M. Connellsville, Pa.
Trans-Ohio Divs.: O. Smith, G. Man....Newark, O.
W. H. Harrison, Asst. M. of Mach..Newark, O.
E. L. Weisgerber, M. M....Newark, O.
H. M. Ingler, M. M....Bellaire, O.
O. B. Perkins, M. M....Zanesville, O.
Andrew Beckert, M. M....Sandusky, O.
F. J. Gunther, M. M....Chicago Junction, O.
Chi. Div.: Gen. Supt..Chicago, Ill.
Benj. Lowther, M. M....Garrett, Ind.
W. H. Wilkinson, M. M....Kingston, Ill.
Baltimore & Philadelphia. 4-8½ g. 20 m. 4 lo. 35 c.
D. Connell, Supt....Wilmington, Del.
Baltimore & Potomac R. R. (See Penna. R. R.; (7) Div.)
Bangor & Piscataquis R. R. 4-8½ g. 63 m. 4 lo. 87 cars.
Arthur Brown, Supt. & Pur. Agt..Bangor, Me.
C. S. Nason, M. M....Bangor, Me.
J. W. Comins, M. C. B....Oldtown, Me.
Bangor & Portland Ry. 4-8½ g. 25 m. 3 lo. 3 c.
C. Miller, Pres....Blairstown, N. J.
Barclay R. R. 4-8½ g. 16 m. 6 l. 200 c.
F. F. Lyon, Supt....Barclay, Pa.
J. A. Hardenburg, Pur. Agt..21 Cort. st., N. Y.
Wm. Johnson, M. M....Towanda, Pa.
Batesville & Brinkley R. R. 3 g. 25 m. 2 lo. 34 c.
Wm. Black, Pres. & Gen. Supt..Brinkley, Ark.
W. J. Thompson, Gen. Man..Little Rock, Ark.
R. B. Davis, Pur. Agt....Brinkley, Ark.
John White, M. M....Brinkley, Ark.
Baton Rouge, Grosse Tête & Opelousas R. R.
5-6 g. 29 m. 3 lo. 12 c.
D. C. Montan, Gen. Supt....Port Allen, La.
Bedford & Bloomfield Ry. 3 g. 43 m. 5 lo. 65 cars.
Jas. W. Kennedy, Gen. Supt. & Pur. Agt.; and
Capt. Geo. Elliott, M. M....Bedford, Ind.
Richard G. Elliott, M. C. B....Bedford, Ind.
Bellaire, Zanesville & Cin. Ry. Co. 3 g. 42 m. 5 lo. 71 c.
S. L. Mooney, Gen. Supt....Woodsville, O.
J. B. Hong, M. M....Bellaire, O.
Bell's Gap R. R. 3 g. 23 m. 4 lo. 148 cars.
R. G. Ford, Supt....Bellwood (P. O.), Pa.
A. Zimmerman, M. C. B....Bellwood, Pa.
Belt R. R. 4-8½ g. 12 m. 10 lo.
W. P. Ijams, Supt....Indianapolis, Ind.
Bennington & Rutland Ry. 4-8½ g. 59 m. 10 lo. 236 c.
F. C. White, Supt. & Pur. Agt..Bennington, Vt.
G. W. Blanchard, M. M....Rutland, Vt.
Berlin Branch R. R. (See Han. Junc., Han. & Gett.)
Bingham, Canyon & Camp Floyd (See Den. & Rio Gr.)
Bladen, Columbus & Florida. 4-8½ g. 16 m. 2 lo. 2 c.
John Colville, Pres....Wilmington, N. C.
Bodie Lumber Co. 3 g. 34 miles.
Thomas Holt, Supt. & Pur. Agt....Bodie, Cal.
E. M. Luckett, M. M. & C. B....Bodie, Cal.
Boston, Barre & Gardner. 4-8½ g. 36 m. 8 lo. 108 c.
H. M. Witter, G. Man. & P. A..Worcester, Mass.
Chas. F. Brigham, M. M....Worcester, Mass.
Boston, Concord, Montreal & White Mts. R. R.
4-8½ g. 167 m. 40 lo. 1,116 cars.
W. A. Stowell, Supt....Plymouth, N. H.
Geo. W. Storer, Pur. Agt....Boston, Mass.
R. Adams, M. M....Lake Village, N. H.
G. A. Ferguson, Asst. M. M..Lake Village, N. H.
L. D. Pickering, M. C. B....Lake Village, N. H.
Whitefield & Jefferson Div.:
A. L. Brown, Supt....Whitefield, N. H.
Boston, Hoosac Tunnel & W'n Ry.
4-8½ g. 87 m. 18 lo. 1,038 cars.
H. L. Morrill, Gen. Man....Saratoga, N. Y.
J. H. Wilder, Pur. Agt....Mechanicville, N. Y.
C. H. Cory, Supt. & M. M..Mechanicville, N. Y.
John S. Ellis, M. C. B....Mechanicville, N. Y.
Boston, Revere Beach & Lynn R. R. 3 g. 9 m. 7 lo. 46 c.
C. A. Hammond, Supt. & P. Agt. Boston, Mass.
J. L. Folsom, M. M....Boston, Mass.
John Coghlan, M. C. B....Boston, Mass.
Boston, Winthrop & Point Shirley R. R.
3 g. 10 m. 1 lo. 8 c.
C. A. Parks, Gen. Supt....Boston, Mass.
J. W. Davis, M. M....Boston, Mass.
Boston & Albany R.R. 4-8½ g. 372 m. 245 lo. 6,111 c.
W. H. Barnes, Gen. Supt....Boston, Mass.
E. Gallup, Asst. Supt....Springfield, Mass.
A. B. Underhill, Supt. M. P...Springfield, Mass.
F. D. Adams, Gen. M. C. B....Allston, Mass.
H. B. Chesley, Div. Supt....Boston, Mass.
G. H. Colby, Div. M. M....Boston, Mass.
C. E. Grover, Div. Supt....Springfield, Mass.
H. W. Eddy, Div. M. M....Springfield, Mass.
J. B. Weston, For. Car Sh. Springfield, Mass.
W. H. Russell, Jr., Div. Supt. E. Albany, N.Y.
T. B. Purvis, Div. M. M...East Albany, N. Y.
J. E. Doran, For. Car Sh..East Albany, N. Y.
Boston & Lowell R. R.
4-8½ g. 140 m. 73 lo. 1,231 cars.
C. H. Mellen, Supt....Boston, Mass.
F. H. Nourse, Pur. Agt....Boston, Mass.
J. F. Crockett, Supt. T. & Mach..Boston, Mass.
Boston & Maine R. R. 4-8½ g. 206 m. 89 lo. 2,100 c.
J. T. Furber, Gen. Supt. & P. A..Boston, Mass.
Geo. J. Fisher, Pur. Agt....Boston, Mass.
Wm. Smith, M. M....Boston, Mass.
D. C. Richardson, M. C. B....Lawrence, Mass.
Boston & N. Y. Air Line R. R. (See N. Y., N. H. & H.)
Boston & Providence R.R. 4-8½ g. 67 m. 52 lo. 1,006 c.
A. A. Folsom, Gen. Supt. & P. A. Boston, Mass.
Geo. Richards, M. M....Roxbury, Mass.
Jno. Lightner, M. C. B....Roxbury, Mass.
Bowling Green R. R. 4-8½ g. 6 m. 2 lo. 4 c.
Wm. A. Wiggins, Gen. Man. Bowling Green, O.
D. W. H. Day, Pur. Agt....Bowling Green, O.
Bradford, Bordell & Kinzua R. R. 3 g. 42 m. 6 lo. 82 c.
Bradford, Eldred & Cuba. 3 g. 54 m. 6 l. 158 c.
Tonawanda Valley & Cuba. 3 g. 60 m. 6 lo. 31 c.
B. C. Williams, Gen. Man. & P. A..Brad'fd, Pa.
Jno. Delaney, M. M. & C. B....Bradford, Pa.
Brattleboro' & Whitehall R. R. 3 g. 36 m. 3 lo. 56 c.
(Operated by Central Vermont.)
Breakwater & Frankford R. R. (See Del., Md. & Va.)
Bridgton & Saco River R. R. 2 g. 16 m. 2 lo. 19 c.
Geo. E. Mansfield, Gen. Supt...Bridgton, Me.
M. M. Caswell, M. M....Bridgton, Me.
Brighthope Ry. 3 g. 37 m. 4 lo. 193 cars.
Jas. R. Worth, Supt....Richmond, Va.
E. B. Thaw, Pur. Agt....Richmond, Va.
A. Gary, Supt. Way & Works. Winterpock, Va.
Alex. Calder, M. M....Chester, Va.
Brooklyn, Bath & Coney Island R. R.
4-8½ g. 7 m. 6 lo. 36 cars.
Geo. A. Gunther, Gen. Man...Brooklyn, N. Y.
Isaac G. Ring, M. M....Brooklyn, N. Y.
Brooklyn, Flatbush & Coney Island Ry.
4-8½ g. 7 m. 7 lo. 54 c.
Robert White, Supt....Brooklyn, N. Y.
Brooklyn & Rockaway Beach R. R.
4-8½ g. 3 m. 2 lo. 18 cars.
Wm. Warner, Supt....East New York, N. Y.
Brunswick & Western R. R. 5 g. 172 m. 13 lo. 170 c.
H. S. Morse, Gen. Man....Brunswick, Ga.
R. D. Meader, Supt....Brunswick, Ga.
W. K. Wallace, Pur. Agt....Brunswick, Ga.
W. R. Kline, M. M....Brunswick, Ga.
Buff., N.Y. & Phil. R.R. 3 & 4-8½ g. 655 m. 120 l. 6,339 c.
Oliver Watson, Gen. Man....Buffalo, N. Y.
Geo. S. Gatchell, Gen. Supt....Buffalo, N. Y.
W. W. Halsey, Asst. to G. Supt..Buffalo, N. Y.
J. H. Poole, Pur. Agt....Buffalo, N. Y.
Allen Vail, Supt. M. P. & M....Buffalo, N. Y.
Buff. Div.: J. T. Gardiner, Supt....Buffalo, N. Y.
Roch. Div.: R. M. Patterson, Supt. Rochester, N.Y.
N. G. Div.: J. W. Watson, Supt....Olean, N. Y.
Riv. Div.: A. Vandivort, Supt....New Castle, Pa.
Pitts. Div.: E. H. Witter, Supt....Oil City, Pa.
H. J. Bookhammer, M. M....Oil City, Pa.
John Monks, M. C. B....Oil City, Pa.
Burlington, Cedar Rapids & Northern Ry.
4-8½ g. 713 m. 76 lo. 2,813 cars.
C. J. Ives, Gen. Supt....Cedar Rapids, Ia.
Robt. Williams, Supt....Cedar Rapids, Ia.
T. Stickney, Pur. Agt....Cedar Rapids, Ia.
R. W. Bushnell, M. M. & C.B. Cedar Rapids, Ia.
Burlington & Lamoille R. R. 4-8½ g. 35 m. 4 lo. 64 c.
G. L. Linsley, Gen. Man. & Supt. Burlington, Vt.
F. G. Brownell, M. M., M. C. B. & P. A. do.
Burlington & Mo. Riv. R. R. (in Neb.) (See C. B. & Q.)
Burlington & North-West'n Ry. 3 g. 38 m. 3 lo. 97 c.
Burlington & Western R. R. 3 g. 15 m. 38 c.
W. B. Jones, Supt....Burlington, Ia.
Burlington & Ohio River R. R. 4-8½ g.
R. Tanner, Pur. Agt....Chicago, Ill.

C

California Northern R. R. 4-8½ g. 26 m. 2 lo. 17 c.
Andrew J. Binney, Gen. Man..Marysville, Cal.
California Southern R. R. 4-8½ g. 127 m. 13 lo. 301 c.
J. N. Victor, Supt....National City, Cal.
Berkley Powell, Mech. Supt..National City, Cal.
Cambridge & Seaford. (See Penna. R. R.; (4) Div.)
Camden & Atlantic R. R. (See Penna. R. R.; (2) Div.)
Canada Southern Ry. (See Mich. Cen.; (2) Div.)
Canada & Atlantic Ry. 4-8½ g. 80 m.
D. C. Linsley, Man....Ottawa, Ont.
Canadian Pacific R. R. 4-8½ g. 1,742 m. 118 l. 2,726 c.
W. C. Van Horne, Gen. Man....Montreal, Que.
W. R. Baker, Asst. Gen. Man..Winnipeg, Man.
K. Blackwell, Mech. Supt....Montreal, Que.
T. W. Shaughnessy, Pur. Agt....Montreal, Que.
E. Div.: Archer Baker, Gen. Supt. Montreal, Can.
Tho. Irwin, Mech. Supt....Brockville, Ont.
W. Div.: J. M. Egan, Gen. Supt..Winnipeg, Man.
F. C. Butterfield, M. M. & M. C. B. Winnipeg, Man.
Cape F'r & Yadkin Val. R. R. 4-8½ g. 47 m. 4 lo. 44 c.
J. S. Morrison, Gen. Supt....Fayetteville, N. C.
Isaac W. Clark, M. M. & C. B..Fayetteville, N. C.
Cape Girardeau Southwestern Ry.
4-8½ g. 33 m. 3 lo. 20 cars.
Louis Houck, Gen. Man..Cape Girardeau, Mo.
W. A. Penney, Gen. Supt..Cape Girardeau, Mo.
W. H. Wheeler, Pur. Agt. Cape Girardeau, Mo.
Fred Glover, M. M....Cape Girardeau, Mo.
Carolina Central R. R. (See Ral. & Aug.)
Carson & Colorado R. R. (See Va. & Truckee).
Catasauqua & Fogelsville. 4-8½ g. 25 m. 6 lo. 581 c.
C. W. Chapman, Supt. & P. A. Catasauqua, Pa.
J. Thomas, M. M....Hokendauqua, Pa.
Chas. J. Holbach, M. C. B....Catasauqua, Pa.
Catskill Mountain R. R. 3 g. 15 m. 2 lo. 26 cars.
Charles A. Beach, Supt....Catskill, N. Y.
Cazenovia, Canastota & De Ruyter. (See U., I. & E.)
Central and South-Western Railroads (Ga.).
5 g. 1,115 m. 145 lo. 2,008 cars.
W. G. Raoul, Pres....Savannah, Ga.
Wm. Rogers, Gen. Supt....Savannah, Ga.
C. H. Carson, Pur. Agt....Savannah, Ga.
Cen. Div.: D. D. Arden, M. M....Savannah, Ga.
T. F. Warwick, M. M....Augusta, Ga.
F. Devine, M. C. B....Savannah, Ga.
So.-West'n Div.: T. D. Kline, Supt....Macon, Ga.
D. M. Gugel, M. M....Macon, Ga.
James A. Knight, M. C. B....Macon, Ga.
Central R.R. of N.J. (See Phil. & Read.; N.J. Cen. Div.)
Central R. R. of S. C. (See Wil. & Wel.)
Central American & Pacific Ry. 3 g. 67 m. 1 lo. 11 c.
W. C. Fitzsimmons, Gen. Supt..Escuintla, Guat.
Central Branch Union Pac. (See Mo. Pac.; (3) Div.
Central Iowa Ry. 4-8½ g. 412 m. 50 lo. 1,959 cars.
C. E. Dudley, Gen. Supt....Marshalltown, Ia.
D. P. Phelps, Asst. Gen. Sup..Marshalltown, Ia.
W. R. Coppock, Asst. Pur. Agt. Marshalltown, Ia.
John Player, M. M....Marshalltown, Ia.
T. L. Seevers, M. C. B....Marshalltown, Ia.
Central Ontario Ry. 4-8½ g. 33 m. 4 lo. 66 cars.
G. W. McMullen, Gen. Man....Picton, Ont.
James Falconar, M. M....Trenton, Ont.
Central Pac. R. R. 4-8½ g. 4,303 m. 382 lo. 11,260 c.
A. N. Towne, Gen. Man....San Francisco, Cal.
J. A. Fillmore, Gen. Supt...San Francisco, Cal.
R. H. Pratt, A. G. Supt....San Francisco, Cal.
J. R. Watson, Gen. Pur. Agt..Sacramento, Cal.
A. J. Stevens, Gen. M. M....Sacramento, Cal.
W. McKenzie, Asst. G. M. M..Sacramento, Cal.
Benj. Welch, Gen. M. C. B....Sacramento, Cal.
G. J. Turner, Asst. G. M. C. B. Sacramento, Cal.
Western: Visalia & Tulare Divs. and Northern Ry.
A. D. Wilder, Supt....W. Oakland, Cal.
G. D. Welch, M. M. (W. Div.) W. Oakland, Cal.
W. B. Ludlow, M. C. B. (W. Div.) do.
S. Johnson, M. M. (T. Div.)....Tulare, Cal.
D. Rutherford, M. M. (N. Rd.). S. Vallejo, Cal.
Sacramento; Oregon Divs.; and Cal. Pac. R. R.
J. B. Wright, Supt....Sacramento, Cal.
M. W. Cooley, M. M. (S. Div.) Sacramento, Cal.
Truckee Div.: J. H. Whited, Supt. Wadsworth, Nev.
Geo. Gregg, M. M....Wadsworth, Nev.
Wm. McPherson, F. Car Sh..Wadsworth, Nev.
Humb't Div.: G. W. Coddington, Supt. Carlin, Nev.
W. F. Smith, M. M....Carlin, Nev.
J. C. Doughty, For. Car Sh....Carlin, Nev.
Salt Lake Div.: A. G. Fell, Supt....Ogden, Utah.
James Lamb, M. M....Terrace, Utah.
A. Sherburne, For. Car Sh....Ogden, Utah.
Colorado Div.: C. B. Seymour, Supt. Needles, Cal.
St. & Cop. R.R.: R. L. Myrick, Supt..Stockton, Cal.
Los Angeles; and Yuma Divs. (So. Pac.):
E. E. Hewitt, Asst. Supt....Los Angeles, Cal.
James Velsir, M. M....Los Angeles, Cal.
T. T. Gilleland, For. Car Sh. Los Angeles, Cal.
Arizona Divs. (So. Pac.):
A. A. Bean, Asst. Supt....Tucson, Ariz.
W. F. Smith, M. M....Tucson, Ariz.
Rio Grande (S. Pac.) & El Paso (G.H. & S.A.) Divs.:
J. Campbell, Ass't Supt....El Paso, Texas.
J. L. Bonner, M. M....El Paso, Texas.
H. C. Standish, For. Sh....El Paso, Texas.
Galveston, Harrisburg & San Antonio Ry.
E. G. Thompson, Supt....Houston, Tex.
San Anto. Div.: W. G. Van Vleck, Supt., and
J. J. Ryan, M. M....San Antonio, Tex.
Houston Div.: H. Flanders, Supt..Harrisburg, Tex.
D. T. Davis, M. M....Harrisburg, Tex.
Louisiana Div.: W. Irwin, Supt....Houston, Tex.
D. C. Smith, M. M....Houston, Tex.
J. M. Mather, M. C. B....Houston, Tex.
Central Texas & N'w'n R. R. (See Hous. & Tex. Cen.)
Central Vermont R. R. 4-8½ g. 673 m. 136 lo. 2,789 c.
J. W. Hobart, Gen. Man....St. Albans, Vt.
J. M. Foss, Asst. Gen. Supt. & M. M. St. Albans, Vt.
No. Div.: I. B. Futvoye, Supt....St. Johns, P. Q.
Rut. Div.: J. Burdett, Supt....Rutland, Vt.
N. L. Davis, M. M. & C. B....Rutland, Vt.
Brattleboro & Whitehall R. R., and
Brat. Div.: E. F. Brooks, Supt...Brattleboro, Vt.
New London No'n R. R. 143 m. 22 lo. 303 c.
C. F. Spaulding, G. Supt. & P. A. New London, Ct.
I. W. Dow, M. M....New London, Ct.
S. O. Banks, M. C. B....New London, Ct.
Chagrin Falls & Southern R. R. 3 g. 6 m. 1 lo. 12 c.
W. Hutchings, Gen. Man....Chagrin Falls, O.
J. W. Williams, Gen. Supt....Chagrin Falls, O.
Charleston & Savannah Ry. 5 g. 115 m. 17 lo. 108 c.
H. S. Haines, Gen. Man....Savannah, Ga.
C. S. Gadsden, Gen. Supt....Charleston, S. C.
H. A. Ulmo, M. M....Savannah, Ga.
Charlotte, Columbia & Augusta R. R. (See Rich. & D.)
Chateaugay R. R. 3 g. 34 m. 6 lo. 312 cars.
A. L. Inman, Gen. Man....Plattsburg, N. Y.
F. N. Corbin, Supt....Plattsburg, N. Y.
J. M. Davis, M. M....Plattsburg, N. Y.
Chattaroi Ry. 4-8½ g. 51 miles 11 loco. 483 cars.
C. H. Rockwell, Gen. Man. & P. A. Ashland, Ky.
J. R. Martin, M. M....Ashland, Ky.
Joseph P. Burleigh, M. C. B....Ashland, Ky.
Cheraw & Chester R. R. (See Rich. & Dan.; (2) Div.)
Cheraw & Darlington R. R. (See Wil. & Wel.)
Cheraw & Salisbury R. R. (See Wil. & Wel.)
Cherokee R. R. (See East & West.)
Cherry Valley R. R. 4-8½ g. 6 m. 3 lo. 6 cars.
E. T. Herndon, Supt....Midland, Mo.
Chesapeake, Ohio & South-Western.
4-9 g. 398 m. 47 lo. 1,339 c.
D. W. C. Brown, Gen. Supt....Louisville, Ky.
H. E. Huntington, Pur. Agt....Louisville, Ky.
J. E. Reeves, Mast. Trans....Louisville, Ky.
R. H. Briggs, Supt. M. P....Elizabethtown, Ky.
D. L. Weaver, M. M....Elizabethtown, Ky.
Chas. Daniels, M. M....Paducah, Ky.
Chesapeake & Ohio Ry. 4-8½ g. 642 m. 169 l. 5,120 c.
C. W. Smith, Gen. Man....Richmond, Va.
D. A. Sweet, Asst. to Gen. Man. Richmond, Va.
A. H. Wood, Asst. Gen. Supt., Huntington, W. Va.
A. S. Emmons, Pur. Agt....Richmond, Va.
T. L. Chapman, Supt. M. P....Richmond, Va.
Eastern Div.: A. H. Wood, Supt..Richmond, Va.
J. N. King, M. C. B....Richmond, Va.
Hunt. Div.: W. B. Ryder, Supt....Hinton, W. Va.
W. H. Thomas, M. M...Huntington, W. Va.
H. C. Bassinger, M. C. B. Huntington, W. Va.
Lex. Div.: J. D. Yarrington, Supt..Lexington, Ky.
S. R. Tuggle, M. M....Lexington, Ky.
Cheshire R. R. 4-8½ g. 80 m. 30 lo. 522 cars.
R. Stewart, Gen. Man....Keene, N. H.
H. H. Stone, Pur. Agt....Keene, N. H.
F. A. Perry, M. M....Keene, N. H.
A. E. Howard, M. C. B....Keene, N. H.
Chester & Lenoir Ry. (See Rich. & Dan.; (3) Div.)
Chicago, Bur. & Kan. City Ry. (See C. B. & Q.)
Chicago, Burlington & Quincy R. R.
4-8½ g. 3,608 m. 545 lo. 21,012 cars.
T. J. Potter, Gen. Man....Chicago, Ill.
(1) C., B. & Q., East of Mo. Riv.
H. B. Stone, Asst. Gen. Man....Chicago, Ill.
Wm. Irving, Gen. Pur. Agt....Chicago, Ill.
G. W. Rhodes, Supt. M. P....Aurora, Ill.
Wm. Forsyth, Mech. Eng....Aurora, Ill.
Ill. Divs.: J. D. Besler, Supt....Galesburg, Ill.
Chi. Div.: Geo. Alexander, Supt....Aurora, Ill.
L. E. Johnson, M. M....Aurora, Ill.
Galesburg Div.: F. C. Rice, Supt. Galesburg, Ill.
Robert Colville, M. M....Galesburg, Ill.
St. L. Div.: S. E. Crance, Supt..Beardstown, Ill.
A. Forsyth, M. M....Beardstown, Ill.
Ia. & Mo. Divs.: W. F. Merrill, Supt. Burlington, Ia.
East. Div.: O. E. Stewart, Supt..Burlington, Ia.
Joel West, M. M....Burlington, Ia.
Mid. Div.: J. B. Maxon, Supt....Ottumwa, Ia.
West'n Div.: W. B. Ryder, Supt....Creston, Ia.
C. W. Eckerson, M. M....Creston, Ia.
Chi., B. & Kan. C'y and St. L., Keo. & No.-W'n Rys.
Robt. Law, Gen. Supt....Keokuk, Ia.
W. H. Bartlett, M. M....Burlington, Ia.
(2) C., B. & Q., West of Mo. Riv.
G. W. Holdrege, Asst. Gen. Man. Omaha, Neb.
C. M. Wead, Supply Agt....Omaha, Neb.
D. Hawksworth, M. M....Plattsmouth, Neb.
Bur. & Mo. Riv. & Neb. Ry. Divs.:
D. E. Thompson, Supt....Lincoln, Neb.
R. V. Div.: A. Campbell, Supt....McCook, Neb.
A. & N. Div.: J. McConniff, Supt...Lincoln, Neb.
Chicago, Milwaukee & St. Paul R. R.
4-8½ g. 4,528 m. 626 lo. 19,018 cars.
S. S. Merrill, Gen. Man....Milwaukee, Wis.
J. T. Clark, Gen. Supt....Milwaukee, Wis.
J. T. Crocker, Pur. Agt....Milwaukee, Wis.
J. M. Lowry, Gen. M. M....Milwaukee, Wis.
E. Fairbairn, M. M....Milwaukee, Wis.
John Baillie, Supt. Car Dept...Milwaukee, Wis.
(1) H. C. Atkins, Asst. Gen. Supt..Milwaukee, Wis.
Chi. Div.: Geo. O. Clinton, Supt....Chicago, Ill.
La Crosse Div.: W. G. Collins, Supt. Milwaukee, Wis.
C. Bluffs Div.: A. J. Earling, Supt....Marion, Ia.
P. du C. & M. Pt. Divs.:
R. B. Campbell, Supt....Milwaukee, Wis.
(2) C. H. Prior, Asst. Gen. Supt. Minneapolis, Minn.
H. & D. Div.: M. W. Kellie, Supt. do.
J. O. Pattie, M. M....Minneapolis, Minn.
Ia. & Minn. Div.: H. R. Williams, Supt. do.
S. Minn. Div.: F. D. Underwood, Supt. Lacrosse, Wis.
Riv. & Dub. Divs.: C. W. Case, Supt. Dubuque, Ia.
S. Charnley, M. M....Dubuque, Ia.
Ia. & Da. Div.: G. W. Sanborn, Supt. Mason City, Ia.
S. Cy. & Da. Div.: J. Jackson, Supt. Sioux City, Ia.
F. H. Moulton, M. M....Yankton, Dak.
(3) D. A. Olin, Asst. Gen. Supt....Racine, Wis.
So.-Wn. Divs.: D. L. Bush, Supt....Racine, Wis.
John Taylor, M. M....Racine, Wis.
E. A. Eddy, M. C. B....Racine, Wis.
(4) Northern Div.: L. B. Rock, Supt. Milwaukee, Wis.
Wm. E. Kittredge, M. C. B..Milwaukee, Wis.
Chicago, Pekin & So-Wn. R.R. 4-8½ g. 88 m. 11 lo. 471 c.
A. H. Crocker, Rec....Joliet, Ill.
J. N. Chilson, M. C. B....Streator, Ill.
Chicago, Rock Island & Pac. Ry.
4-8½ g. 1,381 m. 309 lo. 8,367 cars.
R. R. Cable, V. P. & Gen. Man....Chicago, Ill.
A. Kimball, Gen. Supt....Chicago, Ill.
H. F. Royce, Asst. G. Supt....Davenport, Ia.
F. A. Marsh, Pur. Agt....Chicago, Ill.
T. B. Twombly, Gen. M. M....Chicago, Ill.
B. K. Verbryck, Gen. M. C. B....Chicago, Ill.
Ill. Div.: R. H. Chamberlin, Supt....Chicago, Ill.
R. Biester, M. M....Chicago, Ill.
Sam'l Pullman, M. C. B....Chicago, Ill.
Ia. Divs.: Jno. Given, Supt....Des Moines, Ia.
J. G. Crockett, M. M....Stuart, Ia.
Jas. E. Morrill, M. M....Davenport, Ia.
Chas. M. Leonard, M. C. B....Davenport, Ia.
K. & Des. M. Div.: Jno. Given, Supt..DesMoines, Ia.
S. W. Wakefield, M. M....Keokuk, Ia.
Henry Kummer, M. C. B....Keokuk, Ia.
So.-Wn. Div.: G. F. Walker, Supt....Trenton, Mo.
R. O. Carscadin, M. M....Trenton, Mo.
Chas. R. Best, M. C. B....Trenton, Mo.
Chicago, Saginaw & Canada R. R. (See Det., L. & N.)
Chicago, St. Louis & New Orleans R. R. (See Ill. Cen.)
Chicago, St. Louis & Pittsburg R. R.
4-9 g. 635 m. 202 lo. 3,510 cars.
James McCrea, Manager....Columbus, O.
Wm. Mullins, Gen. Pur. Agt....Pittsburg, Pa.
Edward B. Wall, Supt. M. P....Columbus, O.
1, 3 & 5 Divs.: J. F. Miller, Supt. Richmond, Ind.
Robert Curtis, M. M....Columbus, O.
J. L. Copeland, G. F. Car Shops. Columbus, O.
W. C. Arp, Gen. For....Indianapolis, Ind.
2 & 4 Divs.: Chas. Watts, Supt. Logansport, Ind.
W. W. Reynolds, M. M....Logansport, Ind.
Chas. H. Starr, G. F. C. Shops, Logansport, Ind.
Chicago, St. Paul, Minneapolis & Omaha Ry.
4-8½ g. 1,256 m. 181 lo. 5,221 cars.
J. M. Whitman, Gen. Supt....St. Paul, Minn.
W. H. S. Wright, Pur. Agt....St. Paul, Minn.
Matt. Ellis, M. M....St. Paul, Minn.
H. L. Preston, M. C. B....Hudson, Wis.
Ea. & No. Div.: A. A. Hobart, Supt. St. Paul, Minn.
St. Paul and Sioux City Div.:
H. Spencer, Supt....St. James, Minn.
H. C. Anderson, Gen. For. Sh....Sioux Cy, Ia.
Neb. Div.: Geo. V. Morford, Supt....Omaha, Neb.
Chic., Tex. & Mexican Cent. Ry. (See Gulf, C. & S.F.)
Chicago & Alton R. R. 4-8½ g. 849 m. 213 lo. 6,168 c.
C. H. Chappell, Gen. Man....Chicago, Ill.
W. F. Merrill, Gen. Supt....Chicago, Ill.
A. V. Hartwell, Pur. Agt....Chicago, Ill.
Wm. Wilson, Supt. of Mach..Bloomington, Ill.
Jos. Townsend, G. For. Car Dept. do.
Chi. Div.: A. M. Richards, Supt..Bloomington, Ill.
St. Louis Div.: S. D. Reeves, Supt..Roodhouse, Ill.
Wm. McPhail, M. M....Slater, Mo.
Chicago & Atlantic Ry. 4-8½ g. 269 m.
Gen. Man....Chicago, Ill.
J. C. Williams, Gen. Supt....Chicago, Ill.
J. F. McPherson, Pur. Agt....Chicago, Ill.
Geo. A. Hill, M. M. & M. C. B....Chicago, Ill.
West. Div.: J. H. Parsons, Supt....Chicago, Ill.
East. Div.: J. H. Tinney, Supt. Huntington, Ind.
Chi. & East'n Ill. 4-8½ g. 252 m. 56 lo. 3,500 cars.
O. S. Lyford, Gen. Supt....Chicago, Ill.
D. R. Patterson, Pur. Agt....Chicago, Ill.
P. W. Drew, M. Trans....Chicago, Ill.
Allen Cooke, M. M....Danville, Ill.
Chicago & Grand Trunk Ry. (See Grand Trunk.)
Chicago & Great Southern Ry.
4-8½ g. 124 m. 4 lo. 122 c.
Henry Crawford, Gen. Man....Chicago, Ill.
H. Crawford, Jr., Supt....Chicago, Ill.
Chicago & Iowa R. R. 4-8½ g. 104 m. 16 lo. 237 cars.
T. J. Potter, Gen. Man....Chicago, Ill.
W. H. Holcomb, Gen. Supt....Rochelle, Ill.
H. S. Bryan, M. M....Aurora, Ill.
Chicago & Northwestern Ry.
4-8½ g. 3,610 m. 558 lo. 18,685 cars.
Marvin Hughitt, 2d V. Prs. & G. M. Chicago, Ill.
C. C. Wheeler, Gen. Supt....Chicago, Ill.
W. B. Linsley, Ass't Gen. Supt....Chicago, Ill.
R. W. Hamer, Pur. Agt....Chicago, Ill.
Geo. W. Tilton, Supt. M. P. & M.; and
J. M. Boon, A. Supt. M. P. & M....Chicago, Ill.
Wis. and Mil. Divs. & Sheboygan & W'n Ry.:
Ed. J. Cuyler, Supt....Chicago, Ill.
Gal. Div.: Chas. Murray, Supt....Chicago, Ill.
Pen'a Div.: W. F. Fitch, Supt....Escanaba, Mich.
J. Symons, M. M....Escanaba, Mich.
Mad. Div.: C. A. Swineford, Supt..Baraboo, Wis.
Minn. & Dak. Divs.: S. Sanborn, Asst. Gen. Supt.
and W. A. Scott, M. M....Winona, Minn.
Dak. Cen. Ry.: J. S. Oliver, Supt....Huron, Dak.
Ia. Div.: H. G. Burt, Supt....Boone, Ia.
Geo. W. Lowe, M. M. & M. C. B. Clinton, Ia.
No. Ia. Div.: M. Hopkins, Supt...Eagle Grove, Ia.
Win. & St. P. Div.: W. P. Cosgrave, Supt.
Chicago & West Michigan:
4-8½ g. 409 m. 43 lo. 1,345 cars.
Geo. C. Kimball, V. P. & G. Man. Muskegon, Mich.
A. M. Nichols, Asst. Gen. Supt. Gd. Rapids, Mich.
Edw. Hill, Pur. Agt....Muskegon, Mich.
W. F. N. Davis, M. M....Muskegon, Mich.
Chicago & West'n Ind. R. R. 4-8½ g. 51 m. 12 lo. 150 c.
James Walsh, Gen. Man....Chicago, Ill.
Cincinnati, Columbus & Hocking Val. Ry.
4-9 g. 25 m. 2 lo. 77 cars.
D. P. Hyatt, Gen. Man....Dayton, O.
Cin., Georgetown & Portsmouth. 3 g. 35 m. 3 lo. 45 c.
M. Simmons, Supt....Cincinnati, O.
J. C. Homer, M. M....Cincinnati, O.
Cin., Green Riv. & Nashville R. R. 3 g. 11 m. 2 l. 41 c.
A. C. Sim, Supt....King's Mountain, Ky.
G. Brashears, Pur. Agt....Cincinnati, O.
Cin., Hamilton & Dayton R.R. 4-9 g. 352 m. 92 l. 2,932 c.
C. J. Hepburn, Gen. Supt....Cincinnati, O.
P. Hickey, Pur. Agt....Cincinnati, O.
John Black, Gen. M. M....Lima, O.
W. H. H. Allison, M. C. B....Cincinnati, O.
Day. & Mich. Div.: W. F. Stark, Supt. Toledo, O.
C. R. & C. Div.: W. S. Brewer, M. M. Richm'd, Ind.
Cincinnati, Indianapolis, St. Louis & Chicago Ry.
4-8½ g. 384 m. 71 lo. 3,279 cars.
J. W. Sherwood, Supt....Indianapolis, Ind.
Geo. Tozzer, Pur. Agt....Cincinnati, O.
J. S. Patterson, M. of Mach. & M. C. B. Cincinn., O.
Cincinnati, New Orleans & Texas Pacific Ry. Co.
5 g. 846 m. 123 lo. 3,464 cars.
John Scott, Gen. Man....Cincinnati, O.
Richard Carroll, Gen. Supt....Cincinnati, O.
R. W. Healey, Gen. Pur. Agt....Cincinnati, O.
James Meehan, Gen. M. M....Cincinnati, O.
Cin. So. Div.: W. W. Wells, Supt..Somerset, Ky.
I. W. Fowle, M. M....Cincinnati, O.
John Richardson, M. C. B....Cincinnati, O.
A. Thomson, M. M....Chattanooga, Tenn.
Ala. Gr. S'n Div.: C. B. Wallace, Supt., and
George Manuell, M. M....Chattanooga, Tenn.
Fred Morgan, M. C. B...Chattanooga, Tenn.
V. & M. Div.: E. F. Raworth, Supt., and
James B. Browne, M. M....Vicksburg, Miss.
V. S. & P. Div.: F. Y. Dabney, Supt..Monroe, La.
W. Bell Smith, M. M. & C. B....Monroe, La.
New Orleans & North-Eastern R. R.
T. S. Williams, Supt....New Orleans, La.
Cincinnati Northern Ry. (See Tol., Cin. & St. L.
Cincinnati, Selma & Mobile R.R. 5 g. 71 m. 6 lo. 148 c.
D. McLaren, Spt....Selma, Ala.
H. L. Wright, Pur. Agt....Selma, Ala.
J. M. Levis, M. M....Marion, Ala.
Cincinnati, Van Wert & Michigan R. R.
4-9 g. 39 m. 4 lo. 64 cars.
E. C. Dawes, Gen. Supt....Cincinnati, O.
Cin., Wabash & Mich. Ry. 4-8½ g. 165 m. 13 lo. 402 c.
Norman Beckley, Gen. Man. & P. A. Elkhart, Ind.
O. W. Lamport, Supt....Wabash, Ind.
S. B. Tinker, M. M. & M. C. B....Wabash, Ind.

Cin., Wash. & Balt. 4-8½ g. 312 m. 65 lo. 1,422 cars
Jas. H. Stewart, *Gen. Man*.......Cincinnati, O.
Edw. Evans, *M. M*...............Chillicothe, O.
T. G. Duncan, *Supt. Car Dept*.......Zaleski, O.
Cincinnati, Wheeling & New York R.R. 4-8½ g. 13 m.
Thos. R. Sharp, *Pres*..........New York, N. Y.
Cincinnati & Eastern Ry. 3 g. 100 m. 7 lo. 133 cars.
S. Woodward, *Gen. Man*........Cincinnati, O.
G. H. Wilber, *Gen. Sup. & Pur. Agt*.Cincinnati, O.
P. W. Naughton, *M. M*............Newtown, O.
Cincinnati & South-Eastern Ry. 4-8½ g. 18 m.
John V. Patton, *Gen. Man*.......Newport, Ky.
Clarksburg, Weston & Glenville R. R.
3 g. 26 m. 3 lo. 45 cars.
A. H. Kunst, *Pres. & Gen. Man*.Weston, W. Va.
Sam. A. Steel, *M. M*...........Weston, W. Va.
F. Dillie, *M. C. B*.............Nottingham, O.
Cleveland, Columbus, Cincinnati & Indiana and Indianapolis & St. Louis Rys. and Dayton & Union R. R. 4-8½ g. 785 m. 246 lo. 7,988 cars.
E. B. Thomas, *Gen. Man*.........Cleveland, O.
J. L. Yale, *Pur. Agt*..............Cleveland, O.
W. F. Turreff, *Gen. M. M*........Cleveland, O.
Col. & Cin. Div.: Robt. Blee, *Supt* .Cleveland, O.
W. L. Gilmore, *M. M*...........Cleveland, O.
A. G. Steinbrenner, *G. For. Car Dept*. do.
Div. M. M......Delaware, O.
Ind'p'lis Div.: John O. Ewan, *Supt*..Ind'polis, Ind
J. K. Lape, *M. M*......... Brightwood, Ind.
N. Mark, *G. For. Car Dept*.Brightwood, Ind.
Ind.& St L Ry.: Tho. Burrows, *Supt*.St. Louis, Mo.
T. W. Ranson, *M. M. & C. B*... Mattoon, Ill.
Day. & Un. Rd.: J. H. Barrett, *Supt*.Cincinnati, O
H. S. Gordon, *For. M. Shops*.......Dayton, O.
Cleveland, Delphos & St. Louis R. R.
3 g. 46 m. 2 lo. 44 cars.
I. H. Burgoon, *Gen. Man*..........Delphos, O.
B. F. Marshall, *M. M*...............Delphos, O.
Cleveland, Indiana & St. Louis R. R.
4-8½ g. 19 m. 2 lo. 20 cars.
J. A. Larned, *Rec. & Supt*......Anderson, Ind.
Cleveland, Mt. Vernon & Delaware R. R.
4-9 g. 144 m. 22 lo. 751 c.
N. Monsarrat, *Gen Supt*..............Akron, O.
G. M. Taylor, *M. M. & C. B*.....Mt. Vernon, O.
Cleve., Youngstown & Pitts. R. R. 3 g. 30 m. 3 lo. 138 c.
D. T. Lumley, *Gen. Supt*..........Alliance, O.
C. H. Dorman, *M. M. & M. C. B*....Alliance, O.
Cleveland, Lorain & Wheeling Ry.
4-8½ g. 158 m. 31 lo. 1,878 cars.
Oscar Townsend, *Gen. Man*......Cleveland, O.
Wm. Thornburg, *Supt*............Lorain, O.
W. A. Stone, *M. M*.................Lorain, O.
Cleve. & Marietta R. R. (*See Wheel. & Lake Erie.*)
Cleveland & Pittsburg. (*See Penna. Co.; (4) Div.*)
Clifton & Lordsburg Ry. 20 m.
W. H. Jones, *Gen. Supt. & Pur. Agt*.Lordsb'g N. M.
Clifton & Port Hudson R. R. 4-8½ g. 21 m. 3 lo. 12 c.
C. Corcoran, *Supt*..................Clinton, La.
Ried Blochman, *M. M*............Clinton, La.
Clove Branch R. R. 4-8½ g. 4 m. 1 lo. 59 cars.
C. L. Kimball, *Supt*...........Mattewan, N. Y.
W. G. Vanbuskirk, *M. M*...Dutchess Jc., N. Y.
Coburg, Peterborough & Marmora Ry.
5-6 g. 47 m. 5 lo. 255 cars.
Jas. R. Barber, *Gen. Supt*........Cobourg, Ont.
Jas. Clark, *M. M*.................Cobourg, Ont.
John Tinney, *M. C. B*.............Cobourg, Ont.
Colorado Central R. R. (*See Un. Pac.; (4) Div.*)
Columbia & Greenville R. R. (*See Rich. & D.; (3) Div.*)
Columbia & Puget Sound R.R. 3 g. 21 m. 7 lo. 114 c.
J. M. Colman, *Gen. Supt*..Seattle, Wash. Ter.
Columbus, Hocking Valley & Toledo Ry.
4-9 g. 324 m. 90 lo. 7,257 cars.
G. R. Carr, *Gen. Supt*..............Columbus, O.
W. M. Greene, *Pur. Agt*..........Columbus, O.
Ira G. Hutchins, *M. M*...........Columbus, O.
J. M. Rockafield, *M. C. B*........Columbus, O.
Tol. Div.: M. T. Seymour, *Supt*......Columbus, O.
Hock. V. Div.: M. P. L. Booth, *Supt*.Columbus, O.
Ohio Riv. Div.: C. D. Norris, *Supt*.......Logan, O.
Columbus & Eastern R. R. In progress
J. E. Redfield, *Pres*..........Columbus, Ohio.
Columbus & Maysville Ry. (*See Cin. & East.*)
Columbus & Rome R. R. 3 g. 33 m. 2 lo. 30 cars.
M. E. Gray, *Supt*..................Columbus, Ga.
Columbus & Western Ry. 5 g. 89 m. 2 lo. 53 cars.
E. A. Flewellen, *Gen. Man*.....Columbus, Ga.
R. A. Bridges, *M. M*..............Opelika, Ala.
Concord R. R. 4-8½ g. 141 m. 38 lo. 1,235 cars.
H. E. Chamberlain, *Supt. & P. Agt*.Concord, N. H.
J. T. Gordon, *M. M. & C. B*......Concord, N. H.
Concord & Claremont R. R. (*See Northern of N. H.*
Conn. Riv. and Ver. Val. R. Rs. 4-8½ g. 130 m. 42 lo. 554 c.
J. Mulligan, *Supt. & Pur. Agt*.Springfield, Mass.
W. H. Stearns, *M. M*.........Springfield, Mass.
Robert Hitchcock, *M. C. B*...Springfield, Mass.
Conn. & Passumpsic Rivers R. R. (*See Passumpsic.*)
Connotton Valley R. R. 3 g. 160 m. 26 lo. 997 cars.
Samuel Briggs, *Gen. Man*.........Cleveland, O.
B. C. Bosworth, *M. M*..................Canton, O.
Cooperstown & Susquehanna Valley R. R.
4-8½ g. 16 m. 2 lo. 14 cars.
Andrew Shaw, *Pres*.........Cooperstown, N. Y.
A. Mumford, *M. M*.........Cooperstown, N. Y.
Corning, Cowanesque & Antrim Ry. (*See Syr., G. & C.*)
Cornwall R. R.. 4-8½ g. 12 m. 5 lo. 166 cars
Frank Donahue, *G. Supt. & M. M*.Lebanon, Pa.
Levi Blonch, *M. C. B*................Lebanon, Pa.
Coudersport & Port Allegheny R. R.
3 g. 17 m. 2 lo. 50 cars.
B. A. McClure, *Gen. Supt*.....Coudersport, Pa.
Credit Valley Ry. 4-8½ g. 184 m. 22 lo. 535 cars.
Wm. Whyte, *Gen. Supt*...........Toronto, Ont.
John Macnab, *Pur. Agt*...........Toronto, Can.
H. G. Taylor, *Mech. Supt*........Toronto, Can.
Crooked Creek R. R. 3 g. 9 m. 1 lo. 37 cars.
Walter C. Willson, *Gen. Man*.Webster City, Ia.
Geo. W. Post, *Pur. Agt*.................Lehigh, Ia.
Crown Point Iron Co. R. R. 3 g. 13 m. 4 lo. 113 c.
A. L. Inman, *Gen. Man*.........Plattsburg, N. Y.
H. L. Reed, *Pur. Agt*.......Crown Point, N. Y.
J. M. Davies, *Supt. & M. M*..Crown Point, N. Y.
J. C. Sherman, *M. C. B*.....Crown Point, N. Y.
Cumberland Ry. 4-8½ g. 32 m. 1 lo. 64 c.
J. A. Killam, *Gen. Man*..........Parsboro, N. S.
K. McKinnon, *M. M*...............Parsboro, N. S.
Cumberland Valley R. R. 4-9 g. 125 m. 21 lo. 451 cars.
J. F. Boyd, *Supt*...............Chambersburg, Pa.
A. S. Hull, *M. M*...............Chambersburg, Pa.
C. Wicke, *M. C. B*............Chambersburg, Pa.
Cumberland & Maurice River R. R. 4-8½ g. 20 m.
L. H. Dowdney, *Supt*..........Port Morris, N. J.
Cumberland & Penn. R. R. 4-8½ g. 55 m. 28 lo. 625 c.
P. L. Burwell, *Gen Supt & P A*.Cumberland, Md.
N. W. Howson, *Mast. of Mach*.Mt. Savage, Md.
Nathan Binix, *M. C. B*..........Mt. Savage, Md.

D

Danville & New River R. R. 3 g. 43 m. 2 lo. 30 c.
W. T. Sutherlin, *Gen. Man*.......Danville, Va.
J. F. Morton, *M. M*..................Danville, Va.
Danbury & Norwalk R. R. 4-8½ g. 36 m. 7 lo. 112 c.
L. W. Sandiforth, *G. Supt. & P. A*.S. Norwalk, Ct.
N. M. George, *M. M. & C. B*....Danbury, Conn.
Danville, Mocksville & So.-Wn. R. R. 3 g. 28 m.
H. M. Shivler, *Supt*............Leakesville, N. C.
Danville, Olney & O. R. R.R. 4-8½ g. 110 m. 5 lo. 83 c.
Chas. Howard, *Rec. & Man*..........Olney, Ill.
J. M. Graham, *Supt*....................Kansas, Ill.
Louis Parisoe, *M. M & C. B*.........Kansas, Ill.
Dayton & Union R. R. (*See Clev., Col., Cin. & Ind.*)
Dayton & Michigan R. R. (*See Cin., Ham. & Day.*)
Del. Lackawanna & W. and N. Y., Lack. & W. R. Rs.
4-8½ g. 930 m. 436 lo. 31,989 cars.
Wm. F. Halstead, *Gen. Supt*.......Scranton, Pa.
G. W. B. Cushing, *Pur. Agt*...New York, N. Y.
Walter Dawson, *Mast. of Mach*...Scranton, Pa.
Robt. McKenna, *M. C. B*...........Scranton, Pa.
Bloomsb'g Div.: C. Graham, *M. M*..Kingston, Pa.
Utica Div.: A. C. Salisbury, *Supt*....Utica, N. Y.
Thos. Thatcher, *M. M*................Utica, N. Y.
Morris & Essex Div.; Sussex; P. & D. and C. R. Rs.
A. Reasoner, *Supt*..................Hoboken, N. J.
W. H. Lewis, *M. M*..............Kingsland, N. J.
J. W. Baker, *Mast. Car Rep*.......Dover, N. J.
Oswego & Syracuse Div.:
W. B. Phelps, *Supt*.................Oswego, N. Y.
Jas. Buchanan, *M. M*............Syracuse, N. Y.

Syracuse, Binghamton & New York R. R.
4-8½ g. 81 m. 20 lo. 598 cars.
W. K. Niver, *Gen. Supt*.........Syracuse, N. Y.
Jas. Buchanan, *M. M*.............Syracuse, N. Y.
Cayuga Div.: W. R. Humphrey, *Supt* Ithaca, N. Y.
Delaware, Maryland & Virginia R. R.
4-8½ g. 101 m. 7 lo. 145 cars.
Tho. Groom, *Supt*......................Lewes, Del.
Geo. Messick, *M. M*....................Lewes, Del.
W. H. Virden, *M. C. B*...............Lewes, Del.
Delaware River R. R. 4-8½ g. 20 m. 3 lo. 4 cars.
E. H. Green, *Supt*.............Pedricktown, N. J.
Delaware Western R. R. (*See Balt. & Phil.*)
Delaware & Chesapeake R. R. (*See Penna.; (4) Div.*)
Delaware & Hudson Canal Co.
4-3 and 4-8½ g. 634 m. 180 lo. 10,799 cars.
C. F. Young, *Gen. Man*............Honesdale, Pa.
C. F. Young, *Pur. Agt*..............Albany, N. Y.
R. C. Blackall, *Supt. of Mach*.....Albany N. Y.
Susq. Div.: C. D. Hammond, *Supt*. Albany, N. Y.
Tho. Howard, *M. M*..............Oneonta, N. Y.
J. R. Skinner, *M. C. B*..........Oneonta, N. Y.
Sar. & Ch. Divs.: T. Voorhees, *Supt*...Troy, N. Y.
J. L. Corey, *M. M*.............Green Island, N. Y.
Chr. Körner, *M. C. B*.........Green Island, N. Y.
Pa. Div.: R. Manville, *Supt & Pur Agt*. and
S. H. Dotterer, *M. M*..............Carbondale, Pa.
T. Orchard, *M. C. B*..............Carbondale, Pa.
Denver Circle R. R. 3 g. 6 m. 3 lo. 15 cars.
Theo. C. Henry, *Gen. Man*..........Denver, Col.
J. H. Bedson, *Gen. Supt*.............Denver, Col.
Denver, Utah & Pacific R. R. 3 g. 34 m. 2 lo. 58 c.
L. M. Fouts, *Gen. Supt*...............Denver, Col.
Denver & New Orleans. 4-8½ g. 140 m. 11 lo. 400 c.
C. W. Fisher, *Gen. Man*..............Denver, Col.
Chas. Wheeler, *Pur. Agt*..........Denver, Col.
J. H. Kirk, *M. M. & M. C. B*.......Denver, Col.
Denver & Rio Grande Ry. 3 g. 1,665 m. 222 lo. 5,932 c.
D. C. Dodge, *Gen. Man*.................Denver, Col.
A. B. Garner, *Pur. Agt*................Denver, Col.
N. W. Sample, *Supt. M. P. & M*....Denver, Col.
(1) Col & N. M Div.: R. B. Cable, *Gen. Supt*.Denver, Col.
1st Div.: W. W. Borst, *Supt*.......S. Pueblo, Col.
2d Div.: Cole Lydon, *Supt*.........Alamosa, Col.
3d Div.: G. W. Cook, *Supt*..........Leadville, Col.
4th Div.: R. M. Ridgway, *Supt*.......Salida, Col.
(2) Utah Div.: W. H. Bancroft, *G. S. S.* Lake City, Utah.
Des Moines, Osceola & Southern R. R.
3 g. 100 m. 7 lo. 253 cars.
Henry Stivers, *Gen. Supt*............Osceola, Ia.
L. D. Berry, *M. M*.......................Osceola, Ia.
Elias Tonet, *M. C. B*...................Osceola, Ia.
Des Moines & Ft. Dodge. 4-8½ g. 144 m. 13 lo. 350 c.
C. N. Gilmore, *Supt*..............Des Moines, Ia.
John McGrayel, *M. M*.......Grand Junction, Ia.
E. A. Avery, *M. C. B*.........Grand Junction, Ia.
Det., Gr. H. & Mil. Ry. 4-8½ g. 189 m. 39 lo. 696 c.
S. R. Callaway, *Gen. Man*...........Detroit, Mich.
John S. Lorimer, *Storekeeper*....Detroit, Mich.
W. J. Morgan, *Supt*...................Detroit, Mich.
H. Roberts, *Mech. Supt*.........Ft. Gratiot, Mich.
Det., Lansing & No'n R. R. 4-8½ g. 222 m. 84 lo. 1027 c
John B. Mulliken, *Gen. Man*......Detroit, Mich.
Allan Bourn, *Pur. Agt*..................Detroit, Mich.
Thos. M. Fish, *Gen. Supt*................Ionia, Mich.
G. C. Watrous, *M. M. & C. B*..........Ionia, Mich.
Det., Mack. & Marq. R.R. 4-8½ g. 152 m. 16 lo. 1,112 c.
D. McCool, *Gen. Supt*...........Marquette, Mich.
E. W. Allen, *Pur. Agt*..............Marquette, Mich
John Wilson, *Mech. Supt*......Marquette, Mich.
Dorchester & Delaware R.R. (*See Penna. (4) Del. Div.*)
Dubuque & Dakota R. R. 4-8½ g. 64 m. 2 lo. 54 cars.
A. C. Goodrich, *Supt*....................Waverly, Ia.
W. S. Couch, *Pur. Agt*................Dubuque, Ia.
Duck River Valley R. R. (*See Nash., Chat. & St. L.*)
Dunkirk, Allegheny Valley & Pittsburgh R. R.
4-8½ g. 91 m. 14 lo. 102 cars.
D. Thayer, *Gen. Supt*................Dunkirk, N. Y.
R. C. Moore, *Pur. Agt*.............New York, N. Y.
J. C. Haggett *M. M. & C. B*.....Dunkirk, N. Y.

E

East Alabama Ry. 5 g. 22 m. 3 lo. 19 cars.
W. W. Barnes, *Supt*.....................Opelika, Ala.
East Broad Top R. R. 3 g. 30 m. 7 lo. 260 cars.
A. W. Sims, *Supt*.......................Orbisonia, Pa.
A. B. Greenwood, *M. M*..............Orbisonia, Pa.
East St Louis & Carondelet Ry. 4-9 g. 4 lo. 27 c.
Joseph Hill, *Gen. Supt*..........East St. Louis, Ill.
East Tenn. & Western North Car. R. R.
3 g. 34 m. 2 lo. 70 cars.
Thomas E. Matson, *Supt* ..Elizabethton, Tenn.
East Tennessee, Virginia & Georgia R. R.
5 g. 1,453 m. 173 lo. 3,670 cars.
Henry Fink, *V. P. & Gen. Man*.Knoxville, Tenn.
J. F. O'Brien, *Gen. Supt*.......Knoxville, Tenn.
W. A. Harrison, *Pur. Agt*....Knoxville, Tenn.
East Tenn. Div. and No. Car. and Ohio Branches:
F. K. Huger, *Supt*..................Knoxville, Tenn.
B. J. Sitton, *M. M*..................Knoxville, Tenn.
Jos. Armbruster, *M. C. B*....Knoxville, Tenn.
Alabama Div.: J. M. Bridges, *Supt*...Selma, Ala.
Simon Gay, *M. M*........................Selma, Ala.
W. W. Pierce, *M. C. B*...................Selma, Ala.
Memphis & Charleston R. R. (Div.):
R. B. Pegram, Jr., *Supt*.........Memphis, Tenn.
H. N. Burford, *M. M*..............Memphis, Tenn.
Atlanta & Georgia Divs.:
Atl. Div.: J. W. Fry, *Supt*............Atlanta, Ga.
Ga. Div.: J. E. Mallory, *Supt*....... Macon, Ga.
M. J. Rogers, *M. M. & M. C. B*...Atlanta, Ga.
J. H. Perkins, *For. Car Dept*. Atlanta, Ga.
East & West R. R. of Ala. 3 g. 100 m. 6 lo. 75 c.
John Postell, *Manager*............Cross Plain, Ala.
C. E. Scruton, *M. M. & C. B*...Cedartown, Ga.
Eastern R. R. 4-8½ g. 283 m. 99 lo. 2,268 cars.
Payson Tucker, *Gen. Man*...........Boston, Mass.
D. W. Sanborn, *Mast. of Trans*..Boston, Mass.
G. F. Hurd, *Pur. Agt*..................Boston, Mass.
Amos Pillsbury, *S. M. P. & M*...E. Boston, Mass.
J. D. Billings, *G. For. Car Dept*...Salem, Mass.
Con'y Div.: J. W. Sanborn, *Supt*., Wolfboro J., N. H.
Eastern Kentucky R. R. 4-8½ g. 34 m. 5 lo. 160 c.
H. W. Bates, *Man. & Pur. Agt*... Riverton, Ky.
D. S. Weaver, *M. M*......................Riverton, Ky.
Eastern (Maine) R. R. (*See Maine Central.*)
Eastern Shore R. R. 4-8½ g. 38 m. 3 lo. 9 c.
W. Thompson, *Supt*............Princess Anne, Md.
F. Strattner, *M. M*............Princess Anne, Md.
Elberton Air-Line R.R. (*See Rich. & Dan. N. G. Brs.*)
Elizabeth City & Norfolk R. R. (*See Norfolk So.*)
Elizabethtown, Lex. & Big Sandy R.R. (*See Ches. & O.*)
Emmitsburg R. R. (*See Western Md.*)
Erie & Pittsburg R. R. (*See Penna. Co.; (3) Div.*)
Eureka Springs Ry 4-8½ g. 19 m. 1 lo. 9 cars.
Powell Clayton, *Gen. Man*.Eureka Springs, Ark.
Eureka & Palisade R. R. 3 g. 97 m. 7 lo. 125 cars.
B. Gilman, *Gen. Supt & Pur. Agt*..Eureka, Nev.
E. C. Mills, *M. M*..........................Palisade, Nev.
A. S. Longley, *M. C. B*...............Palisade, Nev.
European & North American R. R. (*See Maine Cen.*)
Evansville, Rockport & E'n Ry. 4-9 g. 71 m. 5 lo. 98 c.
H. L. Shepard, *Supt*...............Evansville, Ind.
Evansv. & Terre Haute. 4-8½ g. 169 m. 26 lo. 973 c.
D. J. Mackey, *Gen. Supt*..........Evansville, Ind.
John Torrance, *M. M*...............Evansville, Ind.

F

Fernandina & Jacksonville R.R. (*See Fla., Tr. & P.*)
Fitchburg R. R.. 4-8½ g. 152 m. 100 lo. 3,430 cars.
John Adams, *Gen. Supt*................Boston, Mass.
E. K. Turner, *Asst. Supt*........Fitchburg, Mass.
F. S. Pratt, *Pur. Agt*....................Boston, Mass.
G. A. Coolidge, *Supt. M. P*..........Boston, Mass.
W. A. Foster, *Asst. Supt. M. P*..Fitchburg, Mass.
J. W. Marden, *M. C. B*.........Charlestown, Mass.
Flint & Pere Marq. 4-8½ g. 346 m. 72 lo. 1,854 cars.
H. C. Potter, *Gen. Man*.........E. Saginaw, Mich.
D. Edwards, *Asst. Gen. Man*..E. Saginaw, Mich.
G. G. Cook, *Pur. Agt*...............E. Saginaw, Mich.
Sanford Keeler, *Gen. Supt*..E. Saginaw, Mich.
W. F. Potter, *Supt.* (E. Div.)..E. Saginaw, Mich.
M. V. Meredith, *Supt.* (W. Div.)E. Saginaw, Mich.
T. J. Hatswell, *M. M*..............E. Saginaw, Mich.
R. McPherson, *M. C. B*..........E. Saginaw, Mich.
Florida Central & Western R. R.
5 g. 234 m. 16 lo. 193 cars.
Wm. M. Davidson, *Gen. Man*.Jacksonville, Fla.
J. S. McElroy, *Mast. Tr. & Mach*.Tallahassee, Fla.

Florida Southern Ry. 3 g. 91 m. 6 lo. 96 cars.
Sherman Conant, *Gen. Man*.........Palatka, Fla.
Jas. D. Hollister, *Supt*..................Palatka, Fla.
M. R. Miller, *M. M. & C. B*..........Palatka, Fla.
Florida Transit R. R. 5 g. 254 m. 15 lo. 204 c.
D. E. Maxwell, *Gen. Supt*.........Fernandina, Fla.
John Hedges, *Pur. Agt*...........Fernandina, Fla.
R. V. Dahoney, *M. M*...............Fernandina, Fla.
G. Hernandez, *M. C. B*...........Fernandina, Fla.
Fonda, Johnst'n & Gloversv. 4-8½ g. 26 m. 5 lo. 25 c.
Lawton Caten, *Supt*..............Gloversville, N. Y.
G. V. Putman, *M. M*.............Gloversville, N. Y.
Fond du Lac, Amboy & Peoria. 3 g. 30 m. 2 lo. 35 c.
Alonzo Kinyon, *Supt. & P. A*.Fond du Lac, Wis.
Fort Dodge & Fort Ridley R. R. (*See Minn. & St. L.*)
Ft. Madison & No.-West'n Ry. 3 g. 45 m. 5 lo. 127 c.
S. B. Kenrick, *Supt. & Pur. Agt*.Ft. Madison, Ia.
I. L. Lamb, *M. M. & C. B*.......Ft. Madison, Ia.
Ft. Wayne, Cin. & Louisv. 4-8½ g. 128 m. 10 lo. 250 c.
White Water R. R. 4-8½ g. 65 m. 5 lo. 170 cars.
W. W. Worthington, *Gen. Supt*...Ft. Wayne, Ind.
T. H. Haberkorn, *M. M*..........Ft. Wayne, Ind.
Wm. Knight, *M. C. B*..............Ft. Wayne, Ind.
Fort Worth & Denver City Ry.
4-8½ g. 114 m. 8 lo. 443 cars.
C. L. Frost, *Gen. Supt*............Fort Worth, Tex.
Freehold & New York Ry. 4-8½ g. 15 m. 4 lo. 40 c.
J. E. Ralph, *Supt. & Pur. Agt*..Keyport, N. J.
C. H. Snedeker, *M. M*...............Freehold, N. J.
Fulton County N. G. Ry. 3 g. 61 m. 3 lo. 106 cars.
A. C. Atherton, *Gen. Supt. & P. Agt*.Lewiston, Ill.

G

Gainesville & Dahlonega R. R. 3 g. 15 m.
W. P. Price, *Pres*..................Dahlonega, Ga.
Gainesville, Jefferson & Southern R.R. (*See Cen. of Ga*)
Gal., Harrisburg & San Antonio Ry. (*See Cen. Pac.*)
Galveston, Houston & Hend. R.R. (*See Mo. Pac. (5) Div.*)
Galveston, Sabine & St. Louis Ry.
4-8½ g. 12 m. 2 lo. 19 cars.
Brad. Barner, *Gen. Man*.........Longview, Tex.
Chas. H. Jewell, *Gen. Supt*......Longview, Tex.
Geneva, Ithaca & Sayre R. R. (*See Lehigh Val.*)
George's Creek & Cumberland R. R.
4-9 g. 25 m. 6 lo. 212 cars.
J. A. Millholland, *Gen. Man*..Cumberland, Md.
Georgetown & Lane's R. R. 5 g. 36 m. 2 lo. 52 c.
G. W. Earle, *Gen. Supt*.......Georgetown, S. C.
Georgia R. R. 5 g. 307 m. 42 lo. 1,017 cars.
John W. Green, *Gen. Man*..........Augusta, Ga.
John S. Cook, *M. M*....................Augusta, Ga.
T. M. Preval, *M. C. B*.................Augusta, Ga.
Georgia Pacific Ry. 5 g. 218 m.
G. J. Foreacre, *Supt*......................Atlanta, Ga.
W. M. Sutton, *Pur. Agt*..........Greenville, Miss.
Benj. Davis, *M. M*..................Greenville, Miss.
J. B. Shelton, *M. C. B*...........Greenville, Miss.
Grand Haven R. R. (*See Chic. & W. Mich.*)
Grand Junction Ry. (*See Midland of Can.*)
Grand Rapids, Indiana & Mackinaw. (*See Gr. R. & I.*)
G'd Rap., Newaygo & L. S. R. R. (*See Chic. & W. M.*)
Grand Rapids & Indiana. 4-8½ g. 528 m. 52 lo. 1,724 c.
W. O. Hughart, *Gen. Man*.Grand Rapids, Mich.
W. R. Shelby, *Pur. Agt*....Grand Rapids, Mich.
S. D. Bradley, *M. M*.......Grand Rapids, Mich.
No'n Div.: J. M. Metheany, *Supt*.G'nd Rap., Mich.
So'n Div.: P. S. O'Rourke, *Supt*.Fort Wayne, Ind.
Grand Southern Ry. of New Brunswick.
4-8½ g. 82 m. 5 lo. 54 cars.
J. N. Greene, *Gen. Man*.........St. George, N. B.
F. W. Holt, *Supt*.....................St. George, N. B.
Thomas Logan, *M. M*..............St. George, N. B.
Grand Tower & Carbondale. 4-8½ g. 25 m. 6 lo. 357 c.
T. M. Williamson, *Supt. & P. A*..Gr. Tower, Ill.
Hugh Smith, *M. M. & C. B*....Grand Tower, Ill.
Grand Trunk Ry. 4-8½ g. 2,332 m. 660 lo. 16,330 c.
Joseph Hickson, *Gen. Man*.........Montreal, Can.
Wm. Wainright, *Asst. Man*.......Montreal, Can.
Mont. Divs.: W. J. Spicer, *Supt*..Montreal, Can.
Jno. Taylor, *Gen. Storekeeper*.Montreal, Can.
Herbert Wallis, *Mech. Supt*...Montreal, Can.
Wm. McWood, *Supt. Car Dept*.Montreal, Can.
F. R. F. Brown, *Man. Lo. Wks*.Montreal, Can.
J. Haskoni, *Div. M. S*............Richmond, P. Q.
Tor. Div.: E. Wragge, *Asst. Gen. Man*.Toronto, Can.
F. L. Wanklyn, *Div. M. S*......Brockville, Ont.
J. Davis Barnett, *Div. M. S*....Stratford, Ont.
Gt. West'n Div.: Chas. Stiff, *Supt*.Hamilton, Ont.
E. Baines, *Store Kpr*..................London, Ont.
C. K. Domville, *Mech. Supt*...Hamilton, Ont.
C. F. Hanson, *Lo. For*...................London, Ont.
J. D. McIlwain, *Supt. Car Dept*..London, Ont.
Chi. & Gr. Trunk Ry. 4-8½ g. 339 m. 103 lo. 1,191 c.
S. R. Callaway, *Gen. Man*..........Chicago, Ill.
W. H. Pettibone, *Supt*......Battle Creek, Mich.
A. Judd, *Pur. Agt*...............Fort Gratiot, Mich.
H. Roberts, *Mech. Supt*.....Port Huron, Mich.
Grand Trunk, Georgian Bay & Lake Erie Ry. (*See G. T.*)
Great Western Ry. (*See Grand Trunk; G. W. Div.*)
Green Bay, Winona & St. Paul R. R.
4-8½ g. 250 m. 19 lo. 623 cars.
Timothy Case, *Gen. Man. & P. A*.Green Bay, Wis.
A. Fenwick, *M. M*....................Ft. Howard, Wis.
Green Cove Spring & Melrose R.R. 3 g. 32 m. 1 lo. 11 c.
S. Ackley, *Pres*......................Philadelphia, Pa.
Green River. 3 g.
G. B. Harper, *Supt*...........................Grove, Ky.
Geo. Lewis, *M. M*..............................Grove, Ky.
Greenwich & Johnsonville Ry. 4-8½ g. 15 m. 1 lo. 7 c.
J. H. Thompson, *Supt*..........Greenwich, N. Y.
Gulf, Col. & Santa Fé Ry. 4-8½ g. 536 m. 43 lo. 1,400 c.
John Sealy, *Gen. Man*..............Galveston, Texas.
F. P. Killeen, *Asst. Gen. Man*.Galveston, Texas.
Jno. W. Thorne, *Pur. Agt*....Galveston, Texas.
G. B. Nichols, *M. M*...............Galveston, Texas.
W. H. Martin, *M. C. B*............Galveston, Texas.
Gulf, W'n Texas & Pac. Ry. 4-8½ g. 68 m. 6 lo. 74 c.
M. D. Monserrate, *Supt. & Pur. Agt*.Cuero, Tex.
James Mooney *M. M*.....................Cuero, Texas.

H

Halifax & Cape Breton Ry. 4-8½ g. 79 m. 9 lo. 268 c.
H. Abbott, *Manager*...........New Glasgow, N. S.
J. B. Jones, *M. M*...............New Glasgow, N. S.
Hannibal & St. Jo. R. R. 4-8½ g. 292 m. 76 lo. 1,906 c.
John B. Carson, *Gen. Man*.............Hannibal, Mo.
T. L. Dunn, *Act. Supt*....................Hannibal, Mo.
T. L. Dunn, *Ch. Eng. & Pur. Agt*..Hannibal, Mo.
Jas. Long, *Supt. M. P. & Car Dep*.Hannibal, Mo.
Hanover Branch R. R. 4-8½ g. 8 m. 2 lo. 18 cars.
E. Y. Perry, *Supt*...............South Hanover, Mass.
Hanover Junction, Hanover & Gettysburg R. R.
4-8½ g. 74 m. 10 lo. 140 cars.
H. D. Scott, *Gen. Supt*............Gettysburg, Pa.
John J. Bingley *M. M*..................Hanover, Pa.
Jas. Harthorn, *M. C. B*................Hanover, Pa.
Harrisburg & Potomac R. R. 4-8½ g. 35 m. 3 lo. 35 c.
R. H. Middleton, *Supt*.........Boiling Springs, Pa.
Hartford & Conn. Val. R. R. 4-8½ g. 47 m. 9 lo. 196 c.
Samuel Babcock, *Gen. Supt*...........Hartford, Ct.
Levi Woodhouse, *Asst. Supt*.........Hartford, Ct.
S. E. Brewer, *M. M. & C. B*.......Hartford, Conn.
Hartford & Conn. W'n R.R. 4-8½ g. 110 m. 16 lo. 495 c.
John F. Jones, *Supt*........................Hartford, Ct.
J. C. Barton, *M. M*..........................Hartford, Ct.
Hartwell R. R. (*See Rich. & Dan.; N. G. Brs.*)
Hecla & Torch Lake R. R. 4-1 g. 5 m. 5 lo. 165 cars.
W. A. Childs, *Gen. Man*..............Calumet, Mich.
Herkimer, Newport & Poland Ry.
3-6 g. 17 m. 2 lo. 24 cars.
Albert Wilber, *Supt*..................Herkimer, N. Y.
Hobart & Manistee River R. R. 3 g. 9 m. 2 lo. 42 c.
H. W. Marsh, *Supt*.........................Hobart, Mich.
Hopkinton, Milford & Woonsocket R. R. 22 m.
E. T. Logee, *Supt*..........................Milford, Mass.
Hot Springs Branch R.R. (*See Mo. Pac.; (4) Div.*)
Housatonic R. R. 4-8½ g. 126 m. 25 lo. 571 cars.
W. H. Yeomans, *Supt*..................Bridgeport, Ct.
D. S. Draper, *Pur. Agt*................Bridgeport, Ct.
N. Slingland, *M. M*.................Falls Village, Ct.
J. J. Ferris, *M. C. B*................Falls Village, Ct.
Houston Belt Ry 4-8½ and 3 gauge 16 miles.
S. L. Werden, *V. P. & Gen. Man*.Houston, Tex.
Houston, East & West Tex. Ry. 3 g. 150 m. 10 lo. 570 c.
Paul Bremond, *Pr. & Pur. Agt*..Houston, Tex.
E. L. Bremond, *Gen. Man*..............Houston, Tex.
B. O. Diffey, *M. M*........................Houston, Tex.
C. F. Schelewa, *M. C. B*.............Houston, Texas.

Houston & Tex. Cen. Ry. 4-8½ g. 750 m. 78 lo. 2,526 c.
J. Waldo, *V. Pr. & Gen. Man*....Houston, Tex.
A. H. Swanson, *Gen. Tr. Man*.....Houston, Tex.
E. S. Larchar, *Pur. Agt*..........New York, N. Y.
L. C. Noble, *Gen. M. M*..................Houston, Tex.
James McGee, *M. C. B*..................Houston, Tex.
So. & Wn. Divs.: M. G. Howe, *Supt*.Houston, Tex.
No. & Ml. Divs.: G. A. Quinlan, *Supt*., and
C. H. Burns, *Asst. M. M*.........Corsicana, Tex.
No.-Wn. Div.: Donald Allen, *Supt*.... Waco, Tex.
Humeston & Shenandoah R. R.
4-8½ g. 113 m. 18 lo. 80 cars.
F. O. Wyatt, *Gen. Man*...............Clarinda, Ia.
M. B. Snyder, *M. M*....................Clarinda, Ia.
Huntingdon & Br. Top Mt. 4-8½ g. 62 m. 18 lo. 69 c.
Geo. F. Gage, *Gen. Supt*..........Huntingdon, Pa.
Samuel B. Knight, *Pur. Agt*..Philadelphia, Pa.
William Barkla *M. M*......................Saxton Pa.

I

Illinois Central R. R. 4-8½ g. 1,909 m. 327 lo. 8,511 c.
Jas. C. Clark, *Gen. Man*..................Chicago, Ill.
E. T. Jeffery, *Gen. Supt*..................Chicago, Ill.
O. Ott, *Pur. Agt*...........................Chicago, Ill.
Henry Schlacks, *Supt. of Mach*....Chicago, Ill.
W. B. Snow, *M. M. Car Works*......Chicago, Ill.
(1) Ill. & Ia. Divs.: C. A. Beck, *Supt*.....Chicago, Ill.
Chic. Div.: T. J. Hudson, *Supt*..........Cairo, Ill.
Wm. Renshaw, *Act. M. M*..............Chicago, Ill.
Mid. Div.: H. L. Frisbie, *Supt*...........Pontiac, Ill.
Spring. Div.: W. Wilkinson, *Supt*.Springfield, Ill.
W. B. McKenna, *M. M*.....................Clinton, Ill.
No'n Div.: J. C. Jacobs, *Supt*.............Amboy, Ill.
J. B. Edams, *M. M*..........................Amboy, Ill.
So. Div.: David Oxley, *M. M*..........Centralia, Ill.
Ia. Div.: M. Gilleas, *Supt*..................Dubuque, Ia.
Thos. W. Place, *M. M*...................Waterloo, Ia.
(2) N. O. Divs.: C. M. Sheafe, *Supt*..New Orleans, La.
W. H. Purdy, *Supt. Mach*..McComb City, Miss.
Geo. W. Baxter, *M. C. B*..McComb City, Miss.
So. Div.: H. W. Clarke, *Acting Supt*. do.
W. P. McKinley, *M. M*.... McComb City, Miss.
No. Div.: J. G. Mann, *Supt*...........Jackson, Tenn.
J. M. Keith, *M. M*.........................Jackson, Tenn.
J. F. White, *M. M*..................Water Valley, Miss.
Illinois Midland Ry. 4-8½ g. 176 m. 12 lo. 611 cars.
D. H. Conklin, *Rec. & Gen. Man*.......Decatur, Ill.
O. E. Grady, *Train Mast*.................Decatur, Ill.
Frank Young, *For. Shops*......................Paris, Ill.
Illinois & St. Louis R. R. 4-8½ g. 19 m. 8 lo. 402 c.
C. H. Sharman, *Gen. Supt. & P. A*.St. Louis, Mo.
D. J. Timlin, *M. M*.........................Belleville, Ill.
Charles Rothe, *M. C. B*..................E. St. Louis Ill.
Indiana, Bloomington & Western Ry.
4-8¾ g. 826 m. 112 lo. 4,067 cars.
C. E. Henderson, *Gen. Man*. Indianapolis, Ind.
I. H. Wilson, *Gen. Supt*......Indianapolis, Ind.
H. C. Norton, *Pur. Agt*.......Indianapolis, Ind.
B. Warren, *Gen. M. M*..........Indianapolis, Ind.
Peoria Div.: E. Hiserodt, *M. M*..... Urbana, Ill.
St. Louis Div.: John King, *M. M*.Indianapolis, Ind.
Ohio So. Rd.: D. R. Ennis, *Supt*....Springfield, O.
Jos. S. Porter, *M. M*........................Sandusky, O.
Indiana, Illinois & Iowa R.R. 4-8½ g. 104 m. 5 lo. 83 c.
F. M. Drake, *Gen. Man*...................Kankakee, Ill.
T. P. Shonts, *Gen. Supt*.................Kankakee, Ill.
H. V. Vedder, *M. M*.........................Streator, Ill.
Indiana & Illinois Southern Ry. 3 g. 91 m. 3 lo. 69 c.
W. C. Lyon, *Gen. Man. & P. Agt*.Robinson, Ill.
J. S. Pickering, *M. M. & C. B*...Effingham, Ill.
Indianapolis, Decatur & Springfield Ry.
(*See Ind., Bloom. & West'n.*)
Indianapolis & St. Louis R. R. (*See C., C., C. & I.*)
Indianapo. & Vincennes R. R. (*See Penna. Co.; (8) Div.*)
Intercolonial Ry. 4-8½ g. 846 m. 135 lo. 4,500 cars.
David Pottinger, *Chief Supt*.....Moncton, N. B.
T. V. Cook, *Gen. Storekeeper*...Moncton, N. B.
H. A. Whitney, *Mech. Supt*.......Moncton, N. B.
Ewd. D. Shaffer, *M. C. B*..........Moncton, N. B.
Monc. Div.: J. E. Price, *Supt*..Cambellton, N. B.
Hal. & St. J. Div.: J. J. Wallace, *Supt*..Truro, N. P.
Levis Div.: A. McDonald, *Supt*.Rivière du Loup, Q.
International Ry. 4-8½ g. 69 m. 7 lo. 12 cars.
D. E. McFee, *Supt*....................Sherbrooke, Que.
J. Ruelle, *M. M*.........................Sherbrooke, Que.
W. Charest, *M. C. B*.................Sherbrooke, Que.
International & Gt. N'n R. R. (*See Mo. Pac.; (5) Div.*)
Iowa Falls & Sioux City R. R. (*See Ill. Cen.*)
Iron Ry. (*See Tol., Cin. & St. L.*)
Iron Mountain & Helena R. R. (*See Mo. Pac.; (4) Div.*)
Ithaca, Auburn & Western Ry. (*See Southern Cen.*)

J

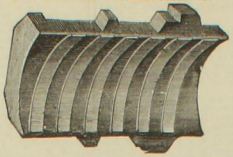
Jacksonville So.-E'n R. R. 4-8½ g. 54 m. 5 lo. 69 c.
E. S. Greenleaf, *Supt*...............Jacksonville, Ill.
Ira F. Petrie, *M. M*....................Jacksonville, Ill.
Jacksonville, St. Augustine & Halifax River Ry.
3 g. 76 m. 2 lo. 27 cars.
W. L. Crawford, *Gen. Man*..Jacksonville, Fla.
H. S. Ming, *Supt*........................Jacksonville, Fla.
Jacksonv., Pensacola & Mob. (*See Fla. Cent. & W.*)
Jamesville & Washington R. R. (*See Norfolk So'n.*)
Jeffersonv'l, Madison & Indpls. R. R. (*See (9) Pa. Co.*)
Jersey City & Albany R. R. 4-8½ g. 38 m.
J. W. McCulloh, *Manager*....Jersey City, N. J.
Jersey City & Bergen R. R. 4-8½ g. 6 m. 2 lo. 13 c.
T. M. Sayre, *Gen. Supt*..............Jersey City, N. J.
Jersey Shore, Pine Creek & Buff. Ry. (*See Phil. & R.*)
Junction & Breakwater R.R. (*See Del., Md. & Va.*

K

Kaaterskill R. R. 3 g. 8 m.
J. H. Jones, *Supt*.......................Rondout, N. Y.
Kankakee & Seneca R.R. (*See Cin., Ind., St. L. & Chi.*)
Kansas Central R. R. (*See Union Pacific.*)
Kansas City, Fort Scott & Gulf R. R.
4-8½ g. 389 m. 34 l. 1,377 c.
Geo. H. Nettleton, *Gen. Man*..Kansas City, Mo.
L. W. Towne, *Gen. Supt*.......Kansas City, Mo.
H. P. Jacques, *Pur. Agt*.......Kansas City, Mo.
J. S. McCrum, *M. M*...............Kansas City, Mo.
A. N. Montier, *M. C. B*............Kansas City, Mo.
Kansas Cy, Lawrence & So. Kan. (*See At., Top. & S. F.*)
Kansas City, Springfield & Memphis R. R.
4-8½ g. 275 m. 10 lo. 125 cars.
George H. Nettleton, *Pres*.... Kansas City, Mo.
Kansas City, St. Joseph & Council Bluffs; and St. Jo. & Des Moines R. Rs. 4-8½ & 3 g. 368 m. 41 lo. 1,148 c.
J. F. Barnard, *Gen. Supt. & P. A*.St. Joseph, Mo.
Wm. Irving, *Pur. Agt*.......................Chicago, Ill.
F. A. Chase, *M. M*.....................St. Joseph, Mo.
Thos. Aylesbury, *G. For. Car. Dep*.St. Joseph, Mo.
Kansas City & Southern Ry. 4-8½ g. In progress.
Wm. Bailey, *Pres*.......................Kansas City, Mo.
Kansas Coal Belt R. R. 4-8½ g. In progress.
C. H. Malin, *Gen. Man*.......................Girard, Kan.
F. A. Hill, *Supt*..............................Girard, Kan.
Kansas & Gulf Short Line R. R. 33 m. 2 lo. 32 cars.
Eli Culverhouse, *Gen. Man*..................Tyler, Tex.
V. K. Stevenson, *Pur. Agt*.....New York, N. Y.
Kendall & Eldred R. R. (*See Buf., N. Y. & Phil.*)
Kent Northern Ry. 4-8½ g. 20 m. 1 lo. 8 cars.
J. C. Brown, *Gen. Man*...........Richibucto, N. B.
Kentucky Central R. R. 4-9 g. 184 m. 22 lo. 640 cars.
G. W. Bender, *Supt*......................Covington, Ky.
A. H. Watts, *M. of Mach*..........Covington, Ky.
J. L. Hackathorn, *M. C. B*........Covington, Ky.
Kentucky & South Atlantic Ry. 3 g. 23 m. 3 lo. 52 c.
Geo. B. Harper, *Supt. & P. A*..Mt. Sterling, Ky.
S. P. Hatfield, *M. M*................Mt. Sterling, Ky.
Keokuk & Des Moines R.R. (*See Chi., R. I. & Pac.*)
Kinzua R. R. (*See Buf., N. Y. & Phil.*)
Kingston & Pembroke Ry. 4-8½ g. 73 m. 7 lo. 124 c.
B. W. Folger, *Supt*.......................Kingston, Ont.
C. F. Gildersleeve, *Pur. Agt*....Kingston, Ont.
Geo. Becker, *M. M*........................Kingston, Ont.
Knox & Lincoln R. R. 4-8½ g. 49 m. 5 lo. 103 cars.
C. A. Coombs, *Supt*..............................Bath, Me.
Wm. A. Field, *M. M*..............................Bath, Me.
C. L. Turner, *M. C. B*............................Bath, Me.
Knoxville & Augusta R. R. 5 g. 16 m. 2 lo. 34 cars.
J. M. Hood, *Supt*.........................Knoxville, Tenn.
M. R. Hood, *Pur. Agt*..................Knoxville, Tenn.

L

Lackawanna & Pittsburg R. R. 3 g. 101 m.
R. M. Patterson, *Gen. Supt*...Friendship, N. Y.
Lake Champlain & Moriah R.R. 4-8½ g. 8 m. 8 lo. 2[illegible] c.
E. B. Hedding, *Supt*.................Port Henry, N. Y.

FINALLY LE ROY  VICTORIOUS.

The following is the FINAL decision of the Patent Office in the matter of the Interference of HOPKINS vs. LE ROY, rendered August 31, 1883:

"COPY."

Department of the Interior, United States Patent Office,
Washington, D. C., Sept. 1, 1883.

"In the matter of the interference of
HOPKINS vs. LE ROY.
On Appeal to the Commissioner.

"For a Journal Box composed of Hard and Soft Metal, the SOFT METAL BANDS PROJECTING ON THE JOURNAL BEARING SIDE BEYOND THE SURFACE OF THE HARD METAL, Priority of Invention Must be Awarded to LE ROY."

By direction of the Commissioner.

Very respectfully,
(Signed) SCHUYLER DINGEE, Chief Clerk.

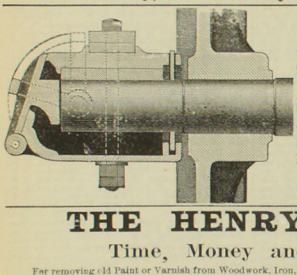
To T. V. LE ROY, Care John R. Bennett, No. 237 Broadway.
George Harding, Counsel.

It is falsely pretended that our invention infringes an alleged patent held by Mr. Hopkins. We hereby offer $2,500 *to Mr. Hopkins if he will commence and prosecute in good faith an action against us to settle the point; and, as we believe he has no valid patent, we stand ready to manufacture and sell his brasses in order that he may sue us. See Babbitt Patent, Sept. 4, 1840, and Joseph Gordman, March 12, 1861. GEORGE W. McLEAN, President.*

Thus reversing all former decisions made in favor of HOPKINS, dissolving the interference heretofore declared in his favor, and sustaining the validity of the LE ROY Patent and every claim made by LE ROY for his Invention.

LE ROY JOURNAL BEARING CO.,

145 Broadway, New York City. GEO. W. McLEAN, President.



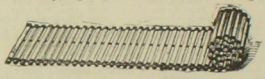
RAOUL JOURNAL BOX.

This box is designed to provide an end stop for the axle, and thereby dispense with the shoulder and collar, and at the same time not obstruct the process of packing the box. The journal may be made any desired length and diameter. The life of the axle is doubled. The expense of brasses and lubricants enormously reduced; end wear of brasses and hot-boxes obviated. It is now in successful operation on trucks of engines, tenders, passenger and freight cars. For further information address

RAMAPO WHEEL & FOUNDRY COMPANY
Ramapo, N. Y.;
Columbus Iron Works Company
Columbus, Ga.

THE EUREKA ROLLING FLOOR CO.
WON THE MEDAL AT THE RAILWAY EXHIBITION AT CHICAGO.

The Rolling Floor in Railway and Street Cars is gradually but surely taking the place of all other methods of flooring where durability, elegance, cleanliness and ease of handling is desired.



It is made of maple wood cylinders, with galvanized malleable iron joints, and can be rolled up in the same manner as a carpet. Recommended and used by the first-class lines of the United States. Any further information will be sent by notifying

THE EUREKA ROLLING FLOOR CO., 14 COOPER UNION, N. Y.

THE HENRY-BELL PAINT REMOVER! FULLY TESTED.

Time, Money and Danger Saved to Railroads and Coach Painters.

For removing old Paint or Varnish from Woodwork, Iron, Glass, etc., *without the use of Fire, Hot Irons, or Scrapers.* Does its work *neat, cheap and rapid. Does not raise the grain of the wood or injure the fabric operated upon. Does its work in less than an hour, 90 minutes.* Can be repainted at once as nicely and effectually as when originally primed. Does away with the use of *Fire, Hot Irons or Scrapers.* Does not injure the workman. Applied with an ordinary paint brush upon any surface which can be painted. Will not run. After old paint is softened it is easily removed by water. One gallon of compound will remove all the paint or varnish on a square (10 × 10 feet). Price list sent on application. Reasonable discount to the trade. Orders, correspondence and tests solicited. Manufactured and sold only by

BELL & HENRY, Platteville, Wisconsin, U. S. A.

NATIONAL RAILWAY PATENT WASTE COMPANY.

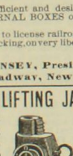
The most economical, efficient and desirable material for packing JOURNAL BOXES of CARS is Cotton Seed Hulls.

The company proposes to license railroads to use this valuable article for packing, on very liberal terms. Send for circular to

H. W. GUERNSEY, President,
240 Broadway, New York.

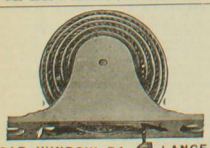
THE MOSHER LIFTING JACK.

Made of the best air-furnace malleable iron, and on scientific principles. Are used by about two hundred railroad companies. Seven sizes, ranging in capacity from four to twenty tons, suited to every department of railroad use and fully guaranteed.



Price-list and discounts furnished on application to manufacturer.

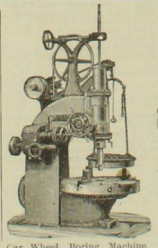
F. M. DEWEESE, Chillicothe, O.



CAR WINDOW BALANCE.

For Passenger Coaches, Sleeping and Parlor Car Windows, consisting of Cone and Coil Spring with wire cord, balancing the weight of sash, noiseless in operation and placed entirely out of sight. Adopted by many of the leading roads. No car complete without them.

O. K. GARDNER, Manufacturer,
28 and Railroad Sts., Pittsburgh, Pa.



Car Wheel Boring Machine Awarded GOLD MEDAL.

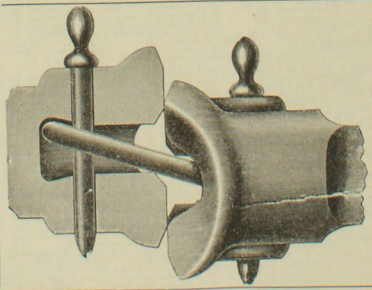
THE MACHINE TOOL WORKS.
FREDERICK B. MILES.

(Formerly FERRIS & MILES.)

TWENTY-FOURTH and WOOD STREETS, PHILADELPHIA, PA.

SEVEN PRIZE MEDALS, CHICAGO EXPOSITION, 1883
FOR THE BEST

AXLE TURNING MACHINERY,
CAR WHEEL BORING AND TURNING MACHINE,
HYDRAULIC WHEEL PRESS,
IRON PLANING MACHINE,
RADIAL DRILLING MACHINE,
SLOTTING MACHINE,
STEAM HAMMER.



SAFFORD'S SAFETY DRAW-BAR.

"VICTORY OVER MORE THAN 30 CONTESTANTS."

Victory over more than 30 Self-Couplers in the Master Car-Builder's Convention of June, 1876. Also indorsement for safety in coupling by the Yard Masters, in their Convention, June, 1877, and by 300 others who were unable to attend the Convention, and 300 railroad officials who are resident in 26 States, and who admitted superiority over any other yet produced. Try 30 free of royalty, and see for yourself! Pattern free, and no change in timbers or connections. Those made by Wilson, Walker & Co., Pittsburgh, Pa., *will* save 200 per cent. *in repairs*, and give double life service over *old styles of* wrought iron. About 43,000 in use by 146 railroads. The *saving in repairs* by using *my invention* is from 20 per cent. to 80 per cent. as per *report of many officers.*

J. B. SAFFORD,
EAGLE IRON WORKS
BUFFALO, N. Y.

EAMES VACUUM BRAKE CO.

RAILWAY TRAIN POWER BRAKES

BEST IN THE WORLD.
WATERTOWN, NEW YORK.

THE EAMES BRAKE is confidently offered as the most efficient, simple durable and the cheapest power Brake in the market. Can be seen in operation upon over 120 roads, and notably the N. Y. Elevated R. R., where it daily makes 69,277 stops.

Lake Erie & Western Ry. 4-8½ g. 388 m. 43 lo. 1,623 c.
D. S. Hill, Gen. Supt......Bloomington, Ill.
T. H. Perry, Pur. Agt......Bloomington, Ill.
H. L. Cooper, Supt. of Equipment......Lima, O.
Lake George & Muskegon River R. R.
4-8½ g. 20 m. 4 lo. 79 cars.
W. S. Gerrish, Gen. Man......Muskegon, Mich.
Lake Shore & Michigan So'n Ry.
4-8½ g. 1,340 m. 547 lo. 17,115 cars.
John Newell, Gen. Man......Cleveland, O.
P. P. Wright, Gen. Supt......Cleveland, O.
A. C. Armstrong, Pur. Agt......Cleveland, O.
Gen. M. M......Cleveland, O.
John Kirby, Gen. M. C. B......Cleveland, O.
East'n Div.: C. B. Couch, Supt......Cleveland, O.
J. S. Graham, M. M......Buffalo, N. Y.
A. C. Robson, M. C. B......Buffalo, N. Y.
L. O. Gassett, M. M......Cleveland, O.
J. Withycombe, M. C. B......Cleveland, O.
Frank. Div.: G. H. McIntire, Supt. Youngstown, O.
Toledo Div.: Thos. Flesher, Jr., Supt. Cleveland, O.
J. M. Sanborn, M. M......Norwalk, O.
W. O. Smith, M. C. B......Norwalk, O.
Mich. Divs.: J. E. Curtis, Supt......Toledo, O.
Det. Brs.: T. J. Charlesworth, Supt. Detroit, Mich.
Lansing, Ypsilanti & Ft. Wayne Branches.
W. H. Caniff, Supt......Hillsdale, Mich.
Western Div.: A. G. Amsden, Supt...Chicago, Ill.
G. W. Stevens, M. M......Elkhart, Ind.
Frank O. Bray, M. C. B......Adrian, Mich.
Gr. Rap. Br.: M. E. Wattles, Supt. Kalamazoo, Mich.
Lake Tahoe R. R. 3 g. 10 m. 3 lo. 49 cars.
D. L. Bliss, Gen. Man......Carson, Nev.
John T. Rogers, Gen. Supt......Carson, Nev.
Geo. R. Lindsay, M. M......Carson, Nev.
Leavenworth, Topeka & So. W'n Ry. (See A. T. & S. F.)
Lebanon Springs R. R. 4-8½ g. 58 m. 5 lo. 44 c.
W. C. Alstyne, Manager......Albany, N. Y.
J. K. Hotaling, Pur. Agt......Albany, N. Y.
Geo. Tefft, M. M......Chatham, N. Y.
Lehigh Valley R. R. 4-8½ g. 559 m. 369 lo. 36,125 c.
H. S. Goodwin, Gen. Supt......Bethlehem, Pa.
W. C. Alderson, Pur. Agt......Philadelphia, Pa.
John I. Kinsey, M. M......So. Easton, Pa.
John S. Lentz, M. C. B......Packerton, Pa.
N. J. Div.: Jas. Donnelly, Supt. Perth Amboy, N. J.
Coal Rds.: J. I. Blakeslee, Supt. Mauch Chunk, Pa.
D. Clark, M. M......Hazleton, Pa.
John Campbell, M. M......Delano, Pa.
B. M. Div.: A. G. Brodhead, S.. Mauch Chunk, Pa.
P. Hofecker, M. M......Weatherly, Pa.
Wy. Div.: A. Mitchell, S. & M. M. Wilkesbarre, Pa.
Pa. & N. Y.; and Geneva, Ithaca & Sayre R. Rs.
Wm. Stevenson, Supt......Sayre, Pa.
J. N. Weaver, M. M......Sayre, Pa.
Lehigh & Hudson River Ry. 4-8½ g. 63 m. 8 lo. 350 c.
Grinnel Burt, Gen. Man......Warwick, N. Y.
John Sayre, Pur. Agt......Warwick, N. Y.
W. L. Anderson, Supt......Warwick, N. Y.
S. Mills, M. M......Warwick, N. Y.
Lehigh & Lackawanna and Lehigh & Susquehanna R. Rs. (See Phil. & Read.; N. J. Cen. Div.)
Levis & Kennebec R. R. (See Quebec Cen.)
Ligonier Valley R. R. 4-9 g. 11 m. 2 lo. 22 cars.
Thos. A. Mellon, Gen. Manager......Pittsburg, Pa.
Geo. Senft, Supt. & P. Agt......Latrobe, Pa.
Little Miami R. R. (See Penna. Co.'s Rds.; (8) Div.)
Little Rock, Miss. River & Texas Ry.
4-8½ g. 170 m. 12 lo. 299 cars.
Hy. Wood, Gen. Man......Little Rock, Ark.
J. A. Woodson, G. S. & P. A. Little Rock, Ark.
F. Hufsmith, M. M. & C. B. Arkansas City, Ark.
Little Rock & Fort Smith. 4-8½ g. 168 m. 12 lo. 353 c.
Hy. Wood, Gen. Man......Little Rock, Ark.
T. Hartman, Gen. Supt......Little Rock, Ark.
James Eblin, M. M......Argenta, Ark.
James Malone, M. C. B......Argenta, Ark.
Little Saw Mill Run R. R. 3 & 4-8½ g. 8 m. 4 lo. 327 c.
T. Hartley, Gen. Man......Banksville, Pa.
Long Island R. R. 4-8½ g. 352 m. 92 lo. 953 cars.
I. D. Barton, Gen. Supt. Long Island City, N. Y.
Benj. Norton, Pur. Agt. Long Island City, N. Y.
C. A. Thompson, M. M. & C. B. do.
W. B. Turner, M. M......Hunter's Point, L. I.
O. Fairhurst, M. M......Greenpoint, L. I.
Longview & Sabine Valley R. R. (See Gal. Sab. & St. L.)
Louisiana W'n R. R. (See Cen. Pac.; G., H. & S. A. Div.)
Louisville, Cin. & Lexington R. R. (See Louis. & N.)
Louis., Evans. & St. L. Ry. 4-8½ g. 254 m. 24 lo. 1,032 c.
Webster Snyder, Gen. Man......Louisville, Ky.
W. H. Field, Pur. Agt......Louisville, Ky.
Geo. N. Sceets, M. M......Evansville, Ind.
Louisville, New Albany & Chicago Ry.
4-8½ g. 470 miles 56 lo. 3,700 cars.
John MacLeod, Gen. Supt......Louisville, Ky.
G. C. Breed, Pur. Agt......Louisville, Ky.
Josiah Bettis, M. M. & C. B...New Albany, Ind.
Nor. Div.: W. G. Sala, Supt......Chicago, Ill.
So. Div.: W. N. Marshall, Supt. New Albany, Ind.
Louisville, New Orleans & Tex. Ry. 450 m. In progress.
R. T. Wilson, Dir. 2 Exchange Ct., New York.
Louisville & Nashville R. R.
5 g. 2,090 m. 367 lo. 11,353 cars.
Milton H. Smith, Gen. Man......Louisville, Ky.
P. P. Huston, Pur. Agt......Louisville, Ky.
E. Dunham, Gen. Supt. Trans......Louisville, Ky.
Reuben Wells, Supt. Mach......Louisville, Ky.
Louisv. Divs.: and Louisv., Cin. & Lex. Ry. (Cin. Div.)
J. G. Metcalf, Supt. Trans......Louisville, Ky.
P. Leeds, M. M. (Lo. Div.)......Louisville, Ky.
J. W. Luttrell, M. M. (Cin. Div.). Louisville, Ky.
J. G. Clifford, M. M. (2d & C. Div.). Bowling Grn. Ky.
Henderson Div.: L. Hege, Supt...Henderson, Ky.
W. P. Pike, M. M......Henderson, Ky.
Nash. & D. Div.: J. Geddes, Supt. Nashville, Tenn.
S. & N. A. Div.: E. Marsh, Supt. Birmingham, Ala.
C. W. White, M. M......Birmingham, Ala.
Mob. & M.; N. Div. Pens. & Sel.; Sl. & Mont. R. Rs.:
M. S. Belknap, Supt......Montgomery, Ala.
J. N. Hall, M. M. (Mont. Shops). Montgomery, Ala.
N. O. Liv.: J. T. Harrahan, Supt. New Orleans, La.
Wm. Adair, M. M......Mobile, Ala.
Memp. Div.: W. Colcamp, Supt. Memphis, Tenn.
J. V. Slusser, M. M......Memphis, Tenn.
St. L. Div.: C. O. Parker, Supt......Evansville, Ind.
Thos. Walsh, M. M......Mt. Vernon, Ill.
Pensacola and So. Div. Pens. & Selma Rds.:
E. O. Saltmarsh, Supt......Pensacola, Fla.
R. B. Small, M. M......Pensacola, Fla.
Louisville & Wadley R. R. 5 g. 10 m. 1 lo. 5 c.
J. H. Wilkins, Supt. & Pur. Agt. Louisville, Ga.

M

Macon & Brunswick R. R.
(See E. Tenn., Vir. & Ga.; At. & Ga. Divs.)
Maine Central R. R. 4-8½ g. 465 m. 59 lo. 1,335 c.
Payson Tucker, Gen. Man......Portland, Me.
Ira K. Russell, M. M......Waterville, Me.
C. H. Kenison, M. C. B......Augusta, Me.
Eastern Maine. 3 g. 19 m. 2 lo. 40 c.
L. L. Lincoln, Supt......Bucksport, Me.
Manchester & Keene R. R. 4-8½ g. 30 m. (See Concord.)
Manchester & Lawrence R. R. (See Concord.)
Manchester & North Weare R. R. (See Concord.)
Manhattan Ry. 4-8½ g. 32 m. 219 lo. 630 pass. c.
Frank K. Hain, Gen. Man......New York, N. Y.
C. L. Green, Supt......New York, N. Y.
T. W. Peeples, M. M......New York, N. Y.
H. A. Webster, M. C. B......New York, N. Y.
Manhattan, Alma & Burlingame Ry. (See A., T. & S. F.)
Manitoba Southwestern Colonization Ry.
4-8½ g. 52 m. 3 lo. 125 cars.
J. M. Eagan, Gen. Supt......Winnipeg, Man.
Chas. Newell, M. M......Winnipeg, Man.
Marietta & Cincinnati R. R. (See Cin. Wash. & Balt.)
Marietta & North Georgia R. R. 3 g. 60 m. 3 lo. 7 c.
J. B. Glover, Supt. & P. Agt......Marietta, Ga.
E. A. Withers, M. M......Marietta, Ga.
Marquette, Houghton & Ontonagon R. R.
4-8½ g. 100 m. 42 lo. 2,530 cars.
Samuel Schoch, Gen. Man......Marquette, Mich.
M. B. McGee, Pur. Agt......Marquette, Mich.
W. H. Williams, M. M......Marquette, Mich.
H. D. Lyons, M. C. B......Marquette, Mich.
Maryland Central R. R. 3 g. 27 m. 4 lo. 56 cars.
S. G. Boyd, Supt......Baltimore, Md.
Massachusetts Central R. R. 4-8½ g. 48 m. 5 l. 81 c.
E. G. Allen, Supt. & Pur. Agt......Boston, Mass.
E. A. Walker, M. M......So. Sudbury, Mass.

McComb, Deshler & Toledo R. R.
(See Cin., Ham. & Day.; D. & M. Div.)
Meadville Ry. (See Penna. Co.'s Rds.; (2) Div.)
Memphis & Charleston R. R. (See E. Tenn. Va. & Ga.)
Memphis & Lit. Rock R. R. 5 g. 135 m. 14 lo. 209 c.
E. K. Sibley, G. Man. & P. A. Little Rock, Ark.
H. G. Fleming, Supt......Memphis, Tenn.
Thos. Rennell, M. M......Argenta, Ark.
P. Twitchell, M. C. B......Argenta, Ark.
Mexican Ry. 4-8½ g. 293 m. 42 lo. 616 cars.
E. W. Jackson, Gen. Man......Mexico, Mex.
Mexican Central Ry. 4-8½ g. 680 m. 73 lo. 818 c.
Howard Hinckley, Pur. Agt......Boston, Mass.
Main Line: 309 m.
D. B. Robinson, Gen. Man......City of Mexico.
J. H. Garner, Supt. Trans......City of Mexico.
J. G. McCuen, Gen. M. M...Chihuahua, Mex.
F. W. Johnstone, M. M......City of Mexico.
J. H. O'Brien, M. C. B......City of Mexico.
Chihuahua Div.: 371 m.
D. B. Robinson, G. Supt. El Paso del Norte, Mex.
Supt. R. S.. El Paso del Norte, Mex.
Tampico Div.: 262 m. In progress.
Edward A. Whorf, Supt......Tampico, Mex.
Mexican National Ry. 3 g. 766 m. 50 lo. 1,283 c.
Texas Mexican Ry. 3 g. 171 m. 10 lo. 212 c.
G. C. Gardner, Gen. Man......New York, N. Y.
J. Dougherty, Pur. Agt......New York, N. Y.
Galv. Div. T. M. Ry.: M. Quin, Supt. Galveston, Tex.
No. Div. Mex. Nat. Ry. & So. Div. Tex.-Mex. Ry.
F. A. Lister, Supt......Laredo, Texas.
Jno. Harding, M. M. & C. B. Corpus Christi, Tex.
So. Div. M. N. Ry.: W. E. Lewis, Supt. Mexico, Mex.
J. M. Winslow, M. M......Mexico, Mex.
Mat. Div.: F. E. Butterfield, Supt. Matamoras, Mex.
Mexican, Oriental, Inter-Oceanic & International R. R. 1,400 miles. In progress.
G. M. Dodge, Pres. 195 B'way, New York, N. Y.
Michigan Cen. R. R. 4-8½ g. 1,485 m. 357 lo. 11,284 c.
H. B. Ledyard, Gen. Man......Detroit, Mich.
Allan Bourn, Pur. Agt......Detroit, Mich.
S. H. Edgerly, Gen. M. M......Jackson, Mich.
Robert Miller, Gen. M. C. B......Detroit, Mich.
(1) Lines West of Detroit River:
E. C. Brown, Gen. Supt......Detroit, Mich.
East. Div.: D. S. Sutherland, Supt. Detroit, Mich.
Bay City, Saginaw & Mackinaw Divisions.:
W. A. Vaughan, Supt......Bay City, Mich.
C. E. Smart, M. M......Bay City, Mich.
Main Line: Gr. Rap.; So. Bend; and So. Hav. Divs.:
C. B. Bush, Supt......Jackson, Mich.
W'n Divs.: R. H. L'Hommedieu, Supt. Chicago, Ill.
(2) Lines East of Detroit River:
W. P. Taylor, Gen. Supt......Buffalo, N. Y.
J. E. Morford, Supt......St. Thomas, Ont.
Rob't Potts, M. C. B......St. Thomas, Ont.
Michigan & Ohio.
Luther Allen, Supt......Toledo, O.
D. J. Durrell, M. M......Marshall, Mich.
Middleburg & Schoharie; and Schoharie Valley R. Rs. 4-8½ g. 11 m. 2 lo. 6 cars.
P. S. Danforth, Gen. Supt......Middleburg, N. Y.
Midland of Canada. 4-8½ g. 452 m. 48 lo. 1,423 c.
Geo. A. Cox, Gen. Man......Peterborough, Ont.
W. B. Ferguson, Gen. Supt. Peterborough, Ont.
C. H. Crofts, Storekeeper...Peterborough, Ont.
J. D. Barnett, Mech. Supt......Port Hope, Ont.
Edward Douglas, M. C. B......Port Hope, Ont.
H. Harry, M. C. B......Lindsay, Ont.
Tor. & Nipissing Div.: J. Haggas, M. M. Uxb'ge, Ont.
Chas. E. Caron, M. C. B......Uxbridge, Ont.
Midland No. Carolina Ry. 5 g. 95 m. 9 lo. 82 cars.
Atlantic & North Carolina Ry. 22 m.
John Gatling, Gen. Man......Newbern, N. C.
J. A. Bryan, Supt......Newbern, N. C.
D. J. Sprague, Pur. Agt......New York, N. Y.
B. Manly, Supt. of Mach......Newbern, N. C.
Milwaukee, Lake Shore & Western Ry.
4-8½ g. 322 m. 40 lo. 1,536 cars.
H. G. H. Reed, Gen. Man. & P. Agt. Milwaukee, Wis.
J. Donahue, Supt......Milwaukee, Wis.
Chas. S. Hayden, Asst. Supt...Manitowoc, Wis.
David B. Curtis, Asst. Supt......Oshkosh, Wis.
John Hickey, M. M......Manitowoc, Wis.
Milwaukee & Northern and Wisconsin & Michigan R. Rds. 4-8½ g. 204 m. 15 l. 430 cars.
C. F. Dutton, Gen. Supt......Milwaukee, Wis.
N. S. Kimball, M. M......Green Bay, Wis.
Mineral Range R. R. 3 g. 13 m. 4 lo. 43 cars.
Chas. E. Holland, Pr. & Supt...Hancock, Mich.
W. H. Carr, Pur. Agt......Hancock, Mich.
T. J. Shellhorn, M. M. & C. B.. Hancock, Mich.
Minneapolis, Lyndale & Minnetonka Ry.
3 g. 20 miles 4 motors 1 lo. 35 cars.
William McCrory, Man......Minneapolis, Minn.
T. W. Heintzelman, M. M.. Minneapolis, Minn.
Minneapolis & St. L. Ry. 4-8½ g. 425 m. 69 lo. 2,046 c.
W. H. Truesdale, Supt......Minneapolis, Minn.
Geo. F. Wilson, Supt. of M.. Minneapolis, Minn.
Mississippi, Terre Aux Boeufs & Lake R. R.
29 miles. In progress.
M. R. Spelman, Supt......New Orleans, La.
Mississippi & Tenn. R. R. 4-8½ g. 101 m. 12 lo. 194 c.
M. Burke, Gen. Supt......Memphis, Tenn.
J. C. Ramsey, M. M......Memphis, Tenn.
S. J. Bolton, M. C. B......Memphis, Tenn.
Missouri, Kansas & Texas Ry. (See Mo. Pac.; (2) Div.)
Missouri Pacific Ry. (Leased and operated lines.)
4-8½ g. 6,005 m. 697 lo. 19,748 cars.
A. A. Talmage, Gen. Man......St. Louis, Mo.
R. B. Lyle, Pur. Agt......St. Louis, Mo.
(1), (2) and (3) Divs.:
John Hewitt, Supt. Mach......St. Louis, Mo.
John Hodge, Supt. Car Dep......St. Louis, Mo.
(4), (5) and (6) Divs.:
O. A. Haynes, S. M. P. & M......St. Louis, Mo.
H. H. Sessions, M. C. B......St. Louis, Mo.
(1) Missouri Pacific Ry. 1,025 m. 152 lo. 4,813 cars.
A. M. Hager, Supt......Sedalia, Mo.
Le Roy Bartlett, M. M......St. Louis, Mo.
E. Taylor, M. M......Sedalia, Mo.
W'n Div.: W. W. Fagan, Supt......Atchison, Kan.
(2) Mo., Kan. & Tex. Ry. 1,308 m. 140 lo. 4,248 cars.
S. Irvin, Asst. Supt. Car Dep......Sedalia, Mo.
J. B. Vandyne, Supt......Parsons, Kan.
J. W. Haines, M. M......Parsons, Kan.
(3) Central Branch Un. Pac. R. R. 388 m. 30 lo. 601 c.
W. W. Fagan, Supt......Atchison, Kan.
H. V. Faries, M. M......Atchison, Kan.
J. W. Blackburn, A. Supt. Car D.. Atchison, Kan.
(4) St. L., I. Mt. & So'n Ry. 909 m. 141 lo. 4,839 c.
Wm. Kerrigan, Supt......St. Louis, Mo.
St. Louis Div.: W. H. Harris, M. M.. De Soto, Mo.
Ark. Div.: J. J. Frey, Asst. Supt. Little Rock, Ark.
R. M. Richardson, M. M......Little Rock, Ark.
(5) Intern'l & Gr. No'n R. R. 891 m. 74 lo. 1,597 c.
Jos. Herrin, Supt......Palestine, Tex.
O. H. Johnson, M. M......Palestine, Tex.
(6) Texas & Pacific Ry. 1,489 m. 143 lo. 3,438 c.
Warder Cumming, Supt......Marshall, Tex.
Eastern, New Or. & Trans Continental Divs.:
J. Williams, Supt......Marshall, Tex.
Perry Stevens, M. M......Marshall, Tex.
E. R. Smith, M. M. & C. B.. New Orleans, La.
Rio Gr. Div.: J. C. Barber, Supt. Big Springs, Tex.
Wm. Foley, M. M......Big Springs, Tex.
Mobile & Ala. Grand Trunk R. R. 5 g. 59 m. 2 lo. 23 c.
Wm. H. Pratt, Trustee......Mobile, Ala.
Mobile & Girard R. R. 5 g. 84 m. 7 lo. 112 cars.
W. L. Clark, Gen. Supt......Columbus, Ga.
J. C. Albrecht, M. M......Columbus, Ga.
A. J. Nix, M. C. B......Columbus, Ga.
Mobile & Montgomery Ry. (See Louis. & Nash.)
Mobile & Northwestern R. R. 3 g. 31 m. 2 lo. 16 c.
Thomas T. A. Lyon, Pres......Glendale, Miss.
Mobile & Ohio R. R. 5 g. 528 m. 75 lo. 1,353 cars.
G. Jordan, V. Pr. & Gen. Man......Mobile, Ala.
F. Jordan, Pur. Agt......Mobile, Ala.
M. T. Carson, Gen. M. M......Whistler, Ala.
J. T. Booth, M. C. B......Whistler, Ala.
So'n Div.: J. G. Motley, Supt......Mobile, Ala.
John Fitzgerald, M. M......Macon, Miss.
No'n Div.: E. S. Hosford, Supt.. Jackson, Tenn.
M. M......Jackson, Tenn.
Mobile & Spring Hill R. R. 5 g. 8 m. 1 lo. 16 cars.
F. Ingate, Supt......Mobile, Ala.
Moline & Southeastern R. R. 3-6 g. 8 m. 2 lo. 26 c.
R. Battersly, Gen. Man......Coal Valley, Ill.

Mont Alto R. R. 4-9 g. 21 m. 2 lo. 8 cars.
G. B. Wiestling, Supt. & P. A......Mont Alto, Pa.
Montgomery & Eufaula Ry. (See Cen. of Ga.)
Montgomery Southern Ry. 3 g. 20 m. 1 lo. 15 cars.
S. D. Hubbard, Jr., Gen. Man. Montgomery, Ala.
Montour R. R. 4-8½ g. 12 m. 2 lo. 130 cars.
C. R. Brown, Supt. & Pur. Agt...Imperial, Pa.
Henry Newman, M. C. B......Imperial, Pa.
Montpelier & Wells Riv. R. R. 4-8½ g. 38 m. 3 lo. 86c.
W. A. Stowell, Supt......Montpelier, Vt.
Montreal, Portland & Boston Ry. (See Passumpsic.)
Montreal & Sorel Ry. 4-8½ g. 47 m. 3 lo. 35 c.
C. N. Armstrong, G. M. & Pur. Agt. Sorel, Que.
J. F. Armstrong, Gen. Supt......Sorel, Que.
G. W. Pangborn, M. M......Sorel, Que.
Montrose Ry. 3 g. 28 m. 3 lo. 24 cars.
T. G. Walter, Gen. Supt......Tunkhannock, Pa.
Morgan's Louis. & Tex. R. R. 4-8½ g. 266 m. 44 l. 885 c.
J. Kruttschnitt, Supt......New Orleans, La.
C. Trumpy, Pur. Agt......New Orleans, La.
N. Tilton, M. M......Algiers, La.
Wm. O'Brien, M. C. B......Algiers, La.
Mount Washington R. R. 5-3 g. 3 m. 6 lo. 6 cars.
Walter Aiken, Gen. Man......Franklin, N. H.
Muncy Creek Ry. (See Wmspt. & No. Br.)

N

Nantasket Beach R. R. 4-8½ g. 6 m. 5 lo. 25 c.
George L. Keyes, Gen. Supt......Boston, Mass.
Nantucket R. R. 3 g. 4 m. 1 lo. 5 cars.
Philip H. Folger, Supt......Boston, Mass.
Napanee, Tamworth & Quebec Ry. In progress.
Ed. W. Rathbun, Man. Dir......Deseronto, Ont.
R. A. Carter, Supt......Deseronto, Ont.
Narragansett Pier R. R. 4-8½ g. 8 m. 2 lo. 11 c.
G. T. Lanphear, Supt. & Pur. Agt. Peacedale, R. I.
Nashua & Rochester R. R. (See Wor. & Nash.)
Nashville, Chattanooga & St. Louis Ry.
5 g. 539 miles 87 lo. 1,979 cars.
J. W. Thomas, G. Man. & P. Agt. Nashville, Tenn.
M. J. C. Wrenne, Supt......Nashville, Tenn.
James Cullen, M. M. & C. B.. Nashville, Tenn.
Nashville & Florence R. R. 5 g. 20 m.
J. T. Craik, Supt......Columbia, Tenn.
Natchez, Jackson & Col. R. R. 3-6 g. 100 m. 7 lo. 72 c.
E. D. Frost, Gen. Supt......Natchez, Miss.
National Car Company. 4,000 freight cars.
L. Millis, Pres......Boston, Mass.
Stewart Stranahan, Sec. & Tr. St. Albans, Vt.
John B. Fletcher, Supt......St. Albans, Vt.
Naugatuck R. R., 4-8½ g. 61 miles, 14 lo. 384 cars.
Geo. W. Beach, Supt......Waterbury, Ct.
Henry Hanford, M. M......Bridgeport, Ct.
Geo. W. Gray, M. C. B......Bridgeport, Ct.
Nebraska, Topeka, Iola & Memphis R. R. 4-8½ g. 16 m.
H. M. Clarke, Gen. Man......Girard, Kan.
C. H. Malin, Gen. Supt......Girard, Kan.
Nevada Central R. R. (See Union Pac.; (7) Div.)
Nevada County N. G. R. R. 3 g. 23 m. 3 lo. 46 cars.
John F. Kidder, Supt......Grass Valley, Cal.
Jas. McCormick, M. M. & C. B. Grass Valley, Cal.
Nevada & Oregon R. R. 3 g. 30 m. 25 cars.
D. W. Balch, Supt......Reno, Nev.
New Brunswick Ry. 4-8½ g. 419 m. 20 lo. 357 cars.
E. R. Burpee, Gen. Man......Woodstock, N. B.
Jesse Mathews, M. M......Gibson, N. B.
T. N. Burpee, M. C. B......Gibson, N. B.
J. J. Seely, Pur. Agt......Gibson, N. B.
Thos. Armstrong, M. M......St. Andrew's, N. B.
G. Houlton, M. C. B......St. Andrew's, N. B.
New Brunswick & Can. Ry. (See New Brun.)
New Canaan R. R. 4-8½ g. 8 m. 2 lo. 4 cars.
Wm. St. John, Supt......New Canaan, Ct.
New Castle R. R. 3-6 g. 5 m. 2 lo. 76 cars.
Geo. Pearson, Gen. Man......New Castle, Pa.
New Castle & Beaver Valley R. R. (See Penna. Co.)
New Haven & Derby R. R. 4-8½ g. 13 m. 4 lo. 70 c.
E. S. Quintard, Supt......New Haven, Conn.
J. M. Whitlock, M. M. & C. B. New Haven, Conn.
New Haven & No'mpton. 4-8½ g. 170 m. 27 lo. 598 c.
S. B. Opdyke, Jr., Supt......New Haven, Ct.
C. N. Yeamans, Pur. Agt......New Haven, Ct.
Henry Fox, M. M......New Haven, Ct.
John Sweeny, M. C. B......New Haven, Ct.
New Jersey & New York Ry. 4-8½ g. 37 m. 6 lo. 40 c.
J. D. Hasbrouck, Gen. Man......Jersey City, N. J.
J. S. Drake, Supt. & M. M......Hillsdale, N. J.
L. B. Van Wagonen, M. C. B......Hillsdale, N. J.
N. J. Southern Ry. (See Phil. & Read.; N. J. So. Div.)
New London Northern R. R. (See Central Ver.)
New Orleans Pacific Ry. (See Mo. Pac.; (6) Div.)
New Orleans & Carrollton R. R.
4-8½ g. 15 m. 12 lo. 79 cars.
C. V. Halle, Supt......New Orleans, La.
John Dahmer, M. M......New Orleans, La.
Jas. Thorn, M. C. B......New Orleans, La.
New Orleans & Mobile R. R. (See Louis. & Nash.)
N. O. & Northeastern R. R. (See Cin., N. O. & Tex. Pac.)
New Orleans & Selma R. R. 5 g. 21 m. 1 lo. 8 cars.
L. B. Schofield, Supt......Selma, Ala.
N. Y. Central & Hudson River R. R.
4-8½ g. 983 m. 676 lo. 25,161 cars.
J. M. Toucey, Gen. Supt......New York, N. Y.
R. C. Moore, Pur. Agt......New York, N. Y.
Wm. Buchanan, Supt. M. P......New York, N. Y.
L. Garey, Supt. Car Dept......New York, N. Y.
N. Y. & Har. Div.: C. M. Bissell, Supt. do.
P. McQ. Gibson, M. M......New York, N. Y.
C. E. Garey, M. C. B......Morrisania, N. Y.
Hud. Riv. Div.: C. M. Bissell, Supt. N. York, N. Y.
Peter Smith, M. C. B......New York, N. Y.
E'n Div.: Zenas C. Priest, Supt......Utica, N. Y.
John Ortton, M. M......West Albany, N. Y.
D. Hoit, M. C. B......West Albany, N. Y.
W'n Div.: Geo. H. Burrows, Supt. Rochester, N. Y.
S. L. White, M. M......Syracuse, N. Y.
Amos Gould, M. M......E. Buffalo, N. Y.
E. A. Olmstead, M. C. B......E. Buffalo, N. Y.
C. H. Burchard, M. C. B.. E. Rochester, N. Y.
Rd. Donaby, M. C. B......Niagara Falls, N. Y.
N. Y. Chic. & St. L. Ry. 4-8½ g. 513 m. 115 lo. 4,838 c.
Lewis Williams, Gen. Man......Cleveland, O.
Jno. Mackenzie, Supt. M. P......Cleveland, O.
Eas'tn Div.: G. H. Kimball, Supt......Cleveland, O.
E. A. Miller, M. M......Conneaut, O.
West'n Div.: A. H. Evans, Act. Supt.. Chicago, Ill.
Jas. Eckford, M. M......Bellevue, O.
New York City & Northern. 4-8½ g. 54 m. 17 lo. 368 c.
Frank S. Gannon, Gen. Supt. High Bridge, N. Y.
Theo. Wheeler, M. M......High Bridge, N. Y.
New York, Lackawanna & W'n Ry. (See Del., L. & W.)
New York, Lake Erie & Western R. R.
Robt. Harris, V. Pr. & G. Man. New York, N. Y.
(1) N. Y., L. E. & W. Div.: 4-8½ g. 1,073 m. 576 lo. 30,553 c.
E. S. Bowen, Gen. Supt......New York, N. Y.
J. A. Hardenburgh, Pur. Agt. New York, N. Y.
F. M. Wilder, Supt. M. P. & M...Susqueh'a, Pa.
E'n Div.: E. O. Hill, Supt......Jersey City, N. J.
J. H. Vreeland, M. M......Jersey City, N. J.
J. N. Mileham, M. C. B......Jersey City, N. J.
Del. Div.: W. J. Murphy, Supt.. Port Jervis, N. Y.
J. Van Vechten, M. M. & C. B. Pt. Jervis, N. Y.
Susq. Div.: J. Jolls, Supt......Elmira, N. Y.
V. Blackburn, M. M......Susquehanna, Pa.
D. B. Goodell, M. C. B......Elmira, N. Y.
Buf. & R. Divs.: Chas. Neilson, Supt.; and
G. B. Ross, M. M......Buffalo, N. Y.
M. Wilder, M. C. B......Buffalo, N. Y.
B. & S.-W. Div.: C. A. Brunn, Supt. do.
W'n Div.: W. B. Coffin, Supt.. Hornellsville, N. Y.
Geo. H. Griggs, M. M......Hornellsville, N. Y.
N. Y. & Greenwood L. Ry. 4-8½ g. 44 m. 8 lo. 53 c.
Stephen Smith, Supt......Jersey City, N. J.
G. A. Hill, M. M......Pompton, N. J.
(2) N. Y., Pa. & O. Div.: 4-8½ g. 565 m. 221 lo. 7,794 c.
J. M. Ferris, Gen. Supt......Cleveland, Ohio.
J. H. Holway, Pur. Agt......Cleveland, Ohio.
Wm. Fuller, Gen. M. M. & C. B...Cleveland, O.
S. V. Smith, Asst. Gen. M. C. B......Kent, Ohio.
E'n Div.: A. L. Dunbar, Supt......Meadville, Pa.
J. A. Cooper, M. M......Meadville, Pa.
D. S. Dockstader, M. C. Rep......Meadville, Pa.
W'n Div.: T. A. Phillips, Supt......Galion, O.
Wm. Hill, M. M......Galion, O.
J. W. Holmes, For. Car Rep......Galion, O.
Geo. Wilson, For. Car Rep......Dayton, Ohio.
Maho'g Div.: N. F. Wood, Supt......Cleveland, O.
N. Wright, M. M......Cleveland, O.
C. N. Thorp, M. C. Rep......Cleveland, O.

New York, New Haven & Hartford R. R.
4-8½ g. 203 m. 123 lo. 2,768 cars.
E. M. Reed, V. P. & Gen. Man.. New Haven, Ct.
R. N. Dowd, Pur. Agt......New Haven, Ct.
N. Y. & N. H. Div.: W. H. Stevenson, Supt. N. Y.
Shore Line and Air Line Divs.:
O. M. Shepard, Supt......N. Haven, Ct.
H. Kettendorf, Supt. M. P......New Haven, Ct.
Jas. Denver, M. C. B......New Haven, Ct.
Hart. Div.: C. S. Davidson, Supt......Hartford, Ct.
John Henny, Jr., Supt. M. P. & M. C. B...... do.
N. Y., Ontario & Western Ry. (See N. Y., W. Sh. & Buf.)
N. Y., Pennsylvania & Ohio R. R. (See N. Y., L. E. & W.)
New York, Philadelphia & Norfolk R. R.
4-8½ g. 10 m. 1 lo. 4 cars.
J. L. Bates, Supt......Pocomoke City, Md.
New York, Providence & Boston R. R.
4-8½ g. 83 m. 29 lo. 430 cars.
J. B. Gardner, Supt......Providence, R. I.
Giles F. Ward, Pur. Agt......Stonington, Conn.
J. H. Anderson, M. M. & C. B. Providence, R. I.
N. Y., Susquehanna & W'n. 4-9 g. 147 m. 28 lo. 991 c.
F. A. Potts, Gen. Man......New York, N. Y.
C. D. McKelvey, Asst. Supt......Jersey City, N. J.
C. T. Demarest, Pur. Agt......New York, N. Y.
W. C. Ennis, M. M. & C. B...Wortendyke, N. J.
New York, Texas & Mexican Ry.
4-8½ g. 92 m. 6 lo. 95 cars.
P. Moneta, Gen. Man......Victoria, Tex.
C. L. Leslie, Gen. Supt......Rosenberg, Tex.
J. G. Conlon, M. M......Victoria, Tex.
New York, West Shore & Buffalo and New York, Ontario & Western Rys.
4-8½ g. 850 m. 98 lo. 2,967 c.
Chas. Paine, Gen. Man......New York, N. Y.
J. E. Childs, Gen. Supt......New York, N. Y.
P. S. Bemis, Pur. Agt......New York, N. Y.
R. H. Soule, Supt. M. P......New York, N. Y.
Mid. Div.: N. R. Hankins, Supt. Middletown, N. Y.
Edw. Minshull, M. M. & C. B. Middletown, N. Y.
No'n Div.: C. W. Lanpher, Supt......Norwich, N. Y.
So. Div.: E. Canfield, Supt......Tappan, N. Y.
Harry Linn, M. M.
Walkill Ry. G. H. Graves, Supt.. Kingston, N. Y.
Syr., Ont. & N. Y.: A. Allen, Supt. Syracuse, N. Y.
George W. West, M. M......Syracuse, N. Y.
Wm. J. McMichael, M. C. B......Syracuse, N. Y.
N. Y. Woodhaven & Rockaway R. R. (See Long Is.)
N. Y. & Greenwood Lake Ry. (See N. Y., L. E. & W.)
N. Y. & Manhattan Beach Ry. (See Long Island.)
New York & Long Branch R. R. (See Phil. & Read.)
New York & New England R. R.
4-8½ g. 478 m. 127 lo. 3,399 cars.
S. M. Felton, Jr., Gen. Man......Boston, Mass.
W. W. McKim, Pur. Agt......Boston, Mass.
Ross Kells, Supt. M. P. & M......Boston, Mass.
W. G. Tabor, M. M......Boston, Mass.
H. E. Barker, Gen. Fore......Norwood, Mass.
East Div.: C. C. F. Bent, Supt......Boston, Mass.
Nor. Div.: P. St. M. Andrews, Supt...Norwich, Ct.
W. A. Stone, M. M......Norwich, Ct.
Prov. Div.: L. W. Palmer, Supt.. Providence, R. I.
Hfd. Div.: E. Holbrook, Supt......Hartford, Ct.
E. M. Humstone, M. M......Hartford, Ct.
D. F. Andregg, For. C. Dept......Hartford, Ct.
New York & Sea Beach R. R. 4-8½ g. 6 m. 4 lo. 40 c.
C. W. Douglass, Gen. Man...Bay Ridge, N. Y.
W. A. Sheldon, Supt......Bay Ridge, N. Y.
Newark, Somerset & Straitsville R. R. (See B. & O.)
Newburg, Dutchess & Conn. R. R. 4-8½ g. 59 miles.
C. L. Kimball, Gen. Supt......Matteawan, N. Y.
W. G. Van Buskirk, M. M. & C. B.,
Dutchess Junction, N. Y.
Newfoundland Ry. 3-6 g. 45 m. 7 lo. 41 c.
C. X. Hobbs, Gen. Man......St. John's N'f'd.
Norfolk Southern R. R. 4-8½ g. 95 m. 11 lo. 182 c.
M. K. King, Gen. Man. & Pur. Agt. Norfolk, Va.
J. S. Whitworth, M. M. & C. B......Norfolk, Va.
Norfolk & Ocean View Narrow Gauge R. R.
3 g. 8 m. 2 lo. 9 cars.
W. H. Taylor, Pres......Norfolk, Va.
Norfolk & Western R. R. (See Shenandoah Val.)
North-Eastern R. R. of Ga. 5 g. 72 m. 2 lo. 20 cars.
H. R. Bernard, Supt......Athens, Ga.
North-Eastern R. R. (S. C.) (See Wil. & Wel.)
North Pacific Coast R. R. 3 g. 84 m. 12 lo. 320 cars.
David Nye, Gen. Supt......San Rafael, Cal.
W. F. Russell, Pur. Agt......San Francisco, Cal.
J. Fowler, M. M......Saucelito, Cal.
North Shore Ry. 4-8½ g. 201 m. 36 lo. 993 c.
W. Wainwright, Gen. Man......Quebec, Can.
A. Davis, Supt. & M. M......Quebec, Can.
Northern (N. H.), and Concord & Claremont Rys.
4-8½ g. 173 m. 25 lo. 569 cars.
Geo. E. Todd, Supt......Concord, N. H.
M. M. & C. B. & Pur. Agt.. do.
Northern (N. J.) R. R. (See N. Y., L. E. & W'n.)
Northern Central Ry. (See Penna. R. R. (6) Div.)
North'n Pacific R. R. 4-8½ g. 2,207 m. 391 lo. 9,897 c.
T. F. Oakes, Gen. Man......St. Paul, Minn.
John H. Ames, Gen. Pur. Agt.. St. Paul, Minn.
Geo. W. Cushing, Supt. M. P., M. & R. S. do.
(1) E'n Div.: J. T. Odell, A. Gen. Man. St. Paul, Minn.
H. J. Small, A. S. Mach......Brainerd, Minn.
1st Gr. Div.: M. C. Kimberly, Supt. St. Paul, Minn.
Frank Howard, M. C. B......Brainerd, Minn.
2d Grand Div.: J. M. Graham, Supt.. Fargo, Dak.
C. C. Quinn, M. M......Fargo, Dak.
3d Gd. Div.: D. R. Taylor, Supt......Mandan, Dak.
E. F. Doran, M. M......Mandan, Dak.
4th Gr. Div.: S. R. Ainslie, Supt.. Glendive, Mont.
S. L. Bean, M. M......Glendive, Mont.
G. S. La Rue, M. M......Billings, Mont.
(2) W'n Div.: J. M. Buckley, Asst. Gen. Man.; and
Otis Sprague, Supt......New Tacoma, W. T.
H. D. Sanborn, Pur. Agt......Portland, Ore.
W. T. Small, A. S. Mach......Sprague, W. T.
Robt. Walker, M. C. B......Sprague, W. T.
F. C. Ford, M. M......New Tacoma, W. T.
S. Wishart, M. C. B......New Tacoma, W. T.
Mo. Div.: B. F. Matthias, Supt......Bismark, Dak.
Pend d'Ore Div.: F. F. Griffin, Supt. Sprague, W. T.
J. Evans, M. M......Sprague, W. T.
Northern & North-W'n Rys. 4-8½ g. 378 m. 50 lo. 1,195 c.
James Webster, Supt......Toronto, Can.
W. C. Schreeber, Pur. Agt......Toronto, Can.
P. Clarke, M. M......Toronto, Can.

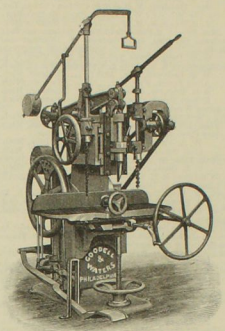
O

Ogdensburg & Lake Champlain R. R.
4-8½ g. 122 m. 33 lo. 1,694 cars.
A. A. Gaddis, Gen. Man......Ogdensburg, N. Y.
E. B. Burnham, Pur. Agt......Ogdensburg, N. Y.
Abr. Klohs, Supt. & M. M......Malone, N. Y.
J. N. Brown, M. C. B......Malone, N. Y.
Ohio Central R. R. 4-8½ g. 325 m. 46 lo. 4,760 cars.
John E. Martin, Gen. Man......Toledo, O.
T. M. Peelar, Supt......Bucyrus, O.
F. W. Stewart, Pur. Agt......Toledo, O.
J. B. Morgan, M. M. & C. B......Bucyrus, O.
Ohio Southern R. R. (See Ind., Bloom. & W'n.)
Ohio & Mississippi Ry. 4-9 g. 616 m. 113 lo. 2,501 cars.
W. W. Peabody, Gen. Man......Cincinnati, O.
G. E. Atwood, Pur. Agt......Cincinnati, O.
J. H. Setchel, Gen. M. M......Cincinnati, O.
Cin. Div.: C. B. Cole, Supt......Seymour, Ind.
John Thumser, M. M......Seymour, Ind.
J. P. Coulter, M. C. B......Aurora, Ind.
Arthur Donaldson, M. M......Vincennes, Ind.
St. L. & Sp. Div.: C. M. Stanton, Supt. St. Louis, Mo.
J. W. Stokes, M. M. (Spring. Div.).. Pana, Ill.
Louisv. Div.: C. B. Cole, Supt......Louisville, Ky.
Oil City & Chicago R. R. (See Buff., N. Y. & Phil.)
Oil City & Ridgway R. R. 4-8½ g. 6 m. 1 lo. 43 cars.
A. F. Kent, Gen. Man......Oil City, Pa.
Old Colony R. R. 4-8½ g. 470 m. 115 lo. 3,124 cars.
J. R. Kendrick, Gen. Man......Boston, Mass.
Main Li. Div.: J. H. French, Supt...Boston, Mass.
R. W. Husted, Pur. Agt......Boston, Mass.
Jas. N. Lauder, Supt. M. P......Boston, Mass.
Sam'l Stevens, M. C. B......Boston, Mass.
Cape Cod Div.: C. H. Nye, Supt.. Hyannis, Mass.
No. Div.: S. A. Webber, Supt......Fitchburg, Mass.
M. M......Taunton, Mass.
Sam. Stevens, M. C. B......Taunton, Mass.
Oregon Ry. & Navigation Co.
3 & 4-8½ g. 531 m. 52 lo. 1,288 cars.
C. H. Prescott, Manager......Portland, Ore.

Goodell & Waters

PHILADELPHIA, PA.

WOOD-WORKING MACHINERY



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BORING, ETC.

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has now an established reputation as a special machine for rapid and good work.

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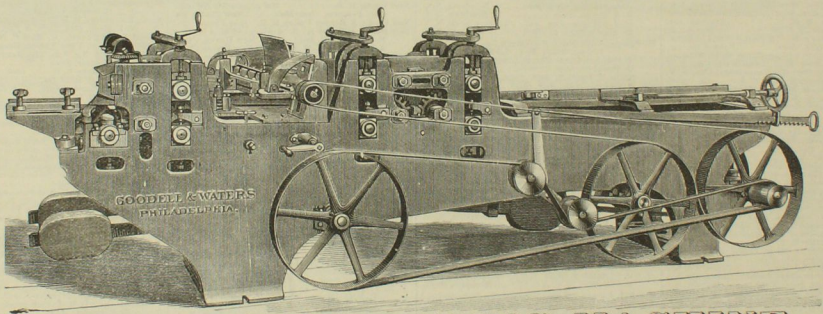
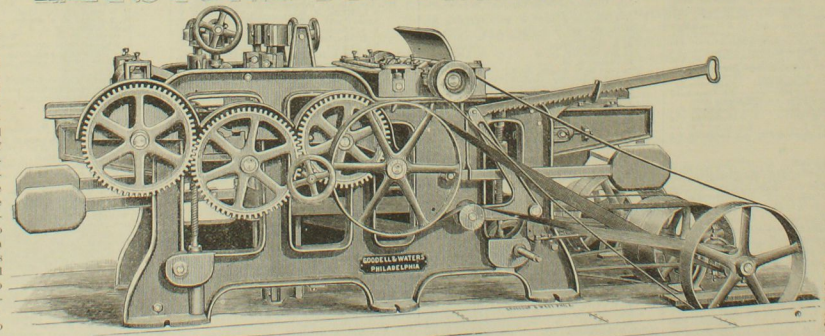


KEYSTONE FLOORING MACHINE.



CAR SILL PLANER AND DOUBLE-SURFACER AND JOINTER.

OUR ASSORTMENT OF GENERAL MACHINERY

is larger than ever and continually increasing in variety. It now embraces first-class machines for bandsawing, slitting and cut-off sawing, resawing and scroll sawing, jointing, grooving, molding, tenoning, turning, mortising, shaping, etc. with requisite shafting, pulleys, hangers, arbors, knives, cutters, chisels, and fixtures for railway and street car builders, ship joiners, makers of heavy and light agricultural implements, pianos, organs, clock cases, furniture, boxes, toys, modern wainscot and hard wood finish.

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F. T. Dodge, *Supt.* (Riv. Div.)....Portland, Ore.
H. S. Rowe, *Supt.* (Ry Div.)......Portland, Ore.
J. M. Drake, *Pur. Agt*...........Portland, Ore.
C. C. Hobart, *Gen. M. M*.......The Dalles, Ore.
Chas. A. Phipps, *M. C. B*.....The Dalles, Ore.
N. G. Div.: Wm. Reed, *Man*.......Portland, Ore.
James Walch, *M. M*...............Portland, Ore.
Oregon & California R. R. 4-8½ g. 333 m. 23 lo. 576 c.
R. Koehler, *Act. Man*.............Portland, Ore.
J. Brandt, *Gen. Supt*..............Portland, Ore.
A. Brandt, *M. M*...................Portland, Ore.
Owensboro & Nashville R. R. 5 g. 44 m. 3 lo. 70 c.
O. M. Dunn, *Supt*...............Owensboro, Ky.
H. M. Gabel, *M. M. & C. B*....Owensboro, Ky.
Oxford & Henderson R. R. 4-8½ g. 13 m. 2 lo. 11 c.
James A. White, *Gen. Supt*...Henderson, N. C.
James E. Lawrence, *M. M*... Henderson, N. C.

P

Pacific Coast Ry. 3 g. 64 m.
J. M. Fillmore, *Manager*.San Luis Obispo, Cal.
W. H. Masterman, *M. M. & C. B*. do.
Painesville & Youngstown Ry. 3 g. 65 m. 7 lo. 319 c.
R. K. Paige, *Rec. & Man*.........Painesville, O.
J. A. Newcome, *Supt*............Painesville, O.
E. B. Baldwin, *M. M*..............Painesville O.
Panama R. R. 5 g. 48 m. 16 lo. 608 cars.
H. A. Woods, *Supt*........ Aspinwall, U. S. Col.
E. Z. Penfield, *Pur. Agt*.......New York, N. Y.
D. P. Wright, *M. M*..........Aspinwall, U. S. Col.
Passumpsic R. R. 4-8½ g. 147 m. 28 lo. 1,101 cars.
E. Raymond, *Pres. & Pur. Agt*. Boston, Mass.
H. E. Folsom, *Supt*.............Lyndonville, Vt.
L. L. Brigham, *M. M*.......... Lyndonville, Vt.
L. F. Woodard, *M. C. B* ....Lyndonville, Vt.
Paulding & Cecil Railway. 4-8½ g. 7 m. 3 lo. 28 c.
S. Frank Eagle, *Pres*......................Cecil, O.
Paw Paw and Toledo & South Haven R. Rds.
3 g. 19 m. 2 lo. 11 cars.
John Ihling, *Supt*.................Lawton, Mich.
Peach Bottom R. R. 3 g. 55 m. 6 lo. 52 cars.
G. R. Dickey, *Supt. & Pur. Agt*.......York, Pa.
E. H. Williams, *M. C. B*...................York, Pa.
W. P. Kirk, *M. M*............................Oxford, Pa.
Pemigewasset Valley R. R. 4-8½ g. 21 m. 2 lo. 127c.
J. Thomas Vose, *Pres*......... .. Boston, Mass.
Pennsylvania Co.'s (5) Roads.
4-9 g. 3,222 m. 920 lo. 32,809 cars.
Gen. Divs. (1), (2), (3), (4) and (5).
Wm. A. Baldwin, *Gen. Man*.....Pittsburg, Pa.
John Thomas, *Gen. Supt*...... Pittsburg, Pa.
Wm. Mullins, *Gen. Pur. Agt*......Pittsburg, Pa.
Joseph Wood, *Supt. M. P*.......Fort Wayne, Ind.
(1) Pittsburg, Ft. Wayne & Chicago Ry.
4-9 g. 468 m. 288 lo. 8,023 cars.
E'n Div.: A. B. Starr, *Supt*.......Allegheny, Pa.
Geo. J. Parkin, *M. M*..... ....Allegheny, Pa.
D. M. Peppard, *M. M*......... . Crestline, O.
W'n Div.: C. D. Law, *Supt*.....Ft. Wayne, Ind.
F. D. Casanave, *M. M*..........Ft. Wayne, Ind.
A. H. Somers, *Gen. For. Shops*...Chicago, Ill.
(2) Ashtabula & Pittsburg, and
(3) Erie & Pittsburg R. Rds. 221 m. 29 lo. 1,362 c.
John M. Kimball, *Supt*.......Youngstown, O.
J. A. Wood, *Gen. For. Shops*.........Erie, Pa.
(4) Cleveland & Pittsb'g R. R. 225 m. 97 lo. 3,534 c.
R. F. Smith, *Asst. Man*.... ......Cleveland, O.
Philip Bruner, *Supt*...............Wellsville, O.
W. F. Beardsley, *Mast. of Mach*. Wellsville, O.
(5) Nc-W'n Ohio Ry.: J. S. Morris, *Supt*...Toledo, O.
Pennsylvania R. R. Co.'s Roads. (7 Gen. Divs.)
4-9 g. 3,158 m. 1,459 loco. 66,816 cars.
Chas. E. Pugh, *Gen Man*......Philadelphia, Pa.
Enoch Lewis, *Pur. Agt*.......Philadelphia, Pa.
John Reilly, *Supt. Trans*......Philadelphia, Pa.
T. N. Ely, *Gen S. M. P*...................Altoona, Pa.
(1) Pennsylvania R. R. Divs.
4-9 g. 1,139 m. 709 lo. 48,087 cars.
S. M. Prevost, *Gen Supt*. ....Altoona, Pa.
Frank L. Sheppard, *Supt. M. P*..Altoona, Pa.
G. W. Strattan, *M. M*.. ....Altoona, Pa.
Jno. P. Levan, *Gen. Fore*... ....Altoona, Pa.
Phila. Div.: Tho. Gucker, *Supt*.Philadelphia, Pa.
H. D. Garrett, *M. M*....W. Philadelphia, Pa.
I. W. Van Houten, *Gen. For*....W. Phila., Pa.
Mid. Div.: O. E. McClellan, *Supt*.Harrisburg, Pa.
E. L. Caum, *M. M*............Harrisburg, Pa.
Samuel W. Myers, *Gen. For*.Harrisburg, Pa.
Altoona Div.: Jas. Reed, *Supt*.......Altoona, Pa.
Pitts. Div.: Robert Pitcairn, *Supt*....Pittsburg, Pa.
D. O. Shaver, *M. M*.......... ....Pittsburg, Pa.
J. G. Stewart, *Gen. For*........Pittsburg, Pa.
W. Pa. Div.: A. P. Kirtland, *Supt*.Blairsville, Pa.
Wm. B. Norris, *M. M*..........Blairsville, Pa.
M. H. Fails, *Gen. For*..........Blairsville, Pa.
Fred. Div.: J. B. Hutchinson, *Supt*.....York, Pa.
Tyrone Div.: S. S. Blair, *Supt*.......Tyrone, Pa.
Lew. Div.: Wm. M. Phillips, *Supt*.Lewistown, Pa.
Bed. Div.: R. L. Holliday, *Supt*......Bedford, Pa.
Monong. Div.: David M. Watt, *Supt*.Pittsburg, Pa.
Wm. Lininger, *M. M*......... ....Pittsburg, Pa.
(2) United R. Rs. of N. J. Divs. 575 m. 305 lo. 4,962 c.
F. Wolcott Jackson, *Gen. St*..Jersey City, N. J.
H. S. Hayward, *Supt. M. P*...Jersey City, N. J.
David H. Baker, *Gen. For*...Jersey City, N. J.
N.Y.Div.: Robt. E. Pettit, *Supt*.Jersey City, N. J.
L. A. Bosdevex, *M. M*. ..Jersey City, N. J.
E. F. Bosdevex, *Gen. For*..Jersey City, N. J.
Belv. Div.: J. A. Anderson, *Supt* Lambertv., N. J.
R. McDowell, *M. M*.......Lambertville, N. J.
Amboy Div: I. S. Buckalew, *Supt*.Camden, N. J.
Thos. Kerr, *M. M*........ ....So. Amboy, N. J.
P. S. Bogart, *Gen. For*......So. Amboy, N. J.
Camden & At. Rd.: W. N. Bannard, *Supt.*, and
Rufus Hill, *M. M*.. ....Camden, N. J.
Samuel Wills, *M. C. B*...... ..Camden, N. J.
(3) West Jersey R. R. 4-9 g. 186 m. 25 lo. 524 cars.
Joseph Crawford, *Gen. Supt* .....Camden, N. J.
W. McAllister, *M. M*..............Camden, N. J.
C. C. Williams, *Gen. For*........Camden, N. J.
(4) Phila., Wilm. & Balt. R.R. 386 m. 121 lo. 1,777 c.
H. F. Kenney, *Gen. Supt*. ....Philadelphia, Pa.
J. M. Wallis, *S. M. P*. ....Philadelphia, Pa.
H. D. Gordon, *M. M*.........Wilmington, Del.
W. H. Lungren, *For. C. Shps*.,Wilmington, Del.
Cen. Div.: L. K. Lodge, *Supt*......... Media, Pa.
Del. Div.: I. N. Mills, *Supt*.....Wilmington, Del.
Mo. Div.: H. H. Carter, *Supt*..Wilmington, Del.
(5) Phila. & Erie R. R. Divs.: 418 m. 117 lo. 3,481 c.
R. Neilson, *Gen. Supt*.... ..Williamsport, Pa.
A. O. Dayton, *Supt. Mo. Po*..Williamsport, Pa.
E'n. Div.: E. B. Westfall, *Supt*. Williamsport, Pa.
Sun.H. & W. Div: A. Walter, *Supt.*; and
H. K. Stout, *M. M*.... ... .Sunbury, Pa.
Mid. Div.: Tho. A. Roberts, *Supt*.....Renova, Pa.
Wm. L. Holman, *M. M*..........Renova, Pa.
West'n Div.: J. W. Reynolds, *Supt*.....Erie, Pa.
W. T. Smith, *M. M*...................Erie, Pa.
(6) Northern Central Ry. 4-9 g. 326 m. 152 lo. 7,627 c.
Robert Neilson, *Gen. Supt*...Williamsport, Pa.
A. O. Dayton, *Supt. M. P*....Williamsport, Pa.
A. W. Sumner, *Pur. Agt*... ....Baltimore, Md.
Susq. Div.: E. B. Westfall, *Supt*. Williamsport, Pa.
Sham. Div.: A. Walter, *Supt*..... ..Sunbury, Pa.
Elm. & Can. Divs.: S. Meade, *Supt*. Elmira, N.Y.
Jas. Strode, *M. M*..... .. ..Elmira, N. Y.
J. C. Dyott, *Gen. For*...... ....Elmira, N. Y.
Baltimore Div.: H. W. Knapp, *Supt*.Baltimore, Md.
(7) Balt. & Pot. & Alex. & Fred. 128 m. 30 lo. 358 c.
H. F. Kenny, *Gen. Supt*.......Philadelphia, Pa.
A. W. Sumner, *Pur. Agt*........Baltimore, Md.
J. M. Wallis, *Supt. Mo. Po*....Philadelphia, Pa.
J. M. Coale, *M. M*.................Baltimore, Md.
G. W. Demarest, *Gen. For*......Baltimore, Md.
Penn. Coal Co.'s R. R. 4-3 g. 67 m. 23 eng. 3,271 c.
J. B. Smith, *Gen. Supt*. ....Dunmore, Pa.
And. Crane, *M. M*. ....Dunmore, Pa.
Geo. W. Simpson, *M. C. B*........Dunmore, Pa.
Pennsylvania, Slatington & New England R. R.
In progress. 4-8½ g. 18 m. 1 lo. 20 cars.
C. H. Stanton, *Supt*........... New York, N. Y.
Pennsylvania & Erie R. R.—Early Branch.
C. R. Early, *Gen. Supt*..........Ridgeway, Pa.
Pensacola & Atlantic R. R. 5 g. 161 m. 9 lo. 67 cars.
W. D. Chipley, *Gen. Supt*........Pensacola, Fla.
M. J. Carroll, *M. M*..............Pensacola, Fla.
Pensacola & Perdido R. R. 5 g. 10 m. 5 lo. 93 cars.
B. F. Simmons, *Pr. & Supt*.... Pensacola, Fla.
H. W. Simmons, *Pur. Agt*......Pensacola, Fla.
J. C. Schulte, *M. M*.............Pensacola, Fla.

People's Ry. 4-8½ g. 15 m. 2 lo. 14 cars.
W. D. Pollard, *Supt*....... ....Pottsville, Pa.
Peoria, Decatur & Evansville Ry.
4-8½ g. 254 m. 30 lo. 1,487 cars.
G. L. Bradbury, *Gen. Man*.... .... Peoria, Ill.
G. R. Cobleigh, *Supt. & Pur. Agt*...Peoria, Ill.
P. Reilly, *M. M*.....................Mattoon, Ill.
Peoria & Farmington R. R. (*See Cen. Ia.*)
Peoria & Pekin Union Ry. 4-8½ g. 20 m. 12 lo. 106 c.
Thos. B. Burnett, *Gen. Supt. & P. A*.Peoria, Ill.
R. F. Hurd, *M. M. & C. B*.. ....Peoria, Ill.
Perkiomen R. R. 4-8½ gauge 39 miles.
D. B. Clack, *Supt*......Perkiomen Junction, Pa.
H. Boyd, *Pur. Agt*. ....Norristown, Pa.
Petersburg R. R. 4-8½ g. 64 m. 10 lo. 133 cars
R. M. Sully, *Gen. Supt*.........Petersburg, Va.
L. E. Clark, *Pur. Agt*..........Petersburg, Va.
R. B. Andrews, *M. M*..... .....Petersburg, Va.
J. W. Fleming, *M. C. B*.........Petersburg, Va.
Phila., Wilmington & Balt. R. R. (*See Penna. R. R.*)
Peterborough & Hillsborough. (*See Northern, N. H.*)
Philadelphia, Newtown & New York R. R.
4-8½ g. 23 m.
W. M. Geary, *Supt*...............Norristown, Pa.
Phila. & Atlantic City Ry. 3-6 g. 55 m. 11 lo. 134 cars.
F. S. Urie, *Supt. & Pur. Agt*..Philadelphia, Pa.
John T. Keihner, *M. M*...........Camden, N. J.
E. Lippincott, *M. C. B*.............Camden, N. J.
Philadelphia & Erie R. R. (*See Penna. R. R.*; (5) *Div.*)
Philadelphia & Reading R. R. (and Branches.)
4-8½ g. 1,414 m. 855 lo. 55,619 cars.
John E. Wootten, *Gen. Man*..Philadelphia, Pa.
(1) Phila. & Read. Div.: 846 m. 539 lo. 24,606 c.
W. S. Wilson, *Pur. Agt*....Philadelphia, Pa.
Geo. Eltz, *Supt. Trans*... ... .. Reading, Pa.
L. B. Paxson, *Eng. of Mach*.....Reading, Pa.
No. Pa. & Bound Brook and Bethlehem Br.:
I. A. Sweigard, *Supt*........Philadelphia, Pa.
Mahoney & Shamokin and other Brs.:
J. H. Olhausen, *Supt*...... Mahoney Plane, Pa.
Catawissa & Williamsport Br.:
D. C. Reinhart, *Supt*. ......Williamsport, Pa.
Mine Hill & Schuylkill Haven Br.:
A. A. Hesser, *Supt*..............Cressona, Pa.
Schuylkill & Susquehanna and Leb. & Tre. Brs.:
H. H. Tracy, *Supt*..... ......Pine Grove, Pa.
Reading & Columbia Br.:
A. M. Wilson, *Supt* ....Columbia, Pa.
(2) N. J. Central Divs.: 573 m. 316 lo. 31,013 cars.
W. W. Stearns, *Gen. Supt*..... Elizabeth, N. J.
B. W. Burnett, *Pur. Agt*......New York, N. Y.
Cen Div.: W. Woodcock, *M. M*. Elizabethport, N. J.
Geo. Hackett, *M. C. B*. ....Elizabethport, N. J.
C. G. Williams, *M. M*.........Jersey City, N. J.
John Alpaugh, *M. M*.........Phillipsburg, N. J.
L. Br. Div.: H. H. Nieman, *Supt*..Long Branch, N. J.
N. J. So. Div.: R. Blodgett, *Supt* ...Manchester, N. J.
Wm. Montgomery, *M. M*....Manchester, N. J.
Chas. N. Sawyer, *M. C. B*....Manchester, N. J.
Lehigh & Susquehanna Div.:
W. S. Polhemus, *Supt*. .. Mauch Chunk, Pa.
L. C. Brastow, *Supt. Mach*.........Ashley, Pa.
Pittsburg, Bradford & Buffalo Ry. (*See Pitts. & West.*)
Pittsburg, Chartiers & Youghiogheny R. R.
4-8¾ g. 19 m.
Geo. S. Griscom, *Gen. Man*......Pittsburg, Pa.
Pittsburgh, Cincinnati & St. Louis Ry. (5 Gen. Divs.)
4-9 g. 916 m. 239 lo. 7,133 cars.
James McCrea, *Manager*........Columbus, O.
Wm. Mullins, *Pur. Agt*. ... ...Pittsburg, Pa.
Edward B. Wall, *Supt M. P*.......Columbus, O.
(1) P., C. & St. L. Div.: E. B. Taylor, *Supt* Pittsburg, Pa.
C. B. Street, *M. M*. ....Dennison, O.
J. M. Copeland, *G. F. Car Shops*.Steubenville, O.
(2) C. & M. V. Div.: W. F. Black, *Supt*..Zanesville, O.
Leroy Kells, *M. M*..... ....Lancaster, O.
Wm. Meikle, *Gen. For*..........Lancaster, O.
Daniel Jewell, *Gen. F. Car Shops*.Lancaster, O.
(3) Li. Mi. Div.: Ralph Peters, *Supt*....Cincinnati, O.
Leroy Kells, *M. M*...............Cincinnati, O.
Jos. Underwood, *G. F. Car Shops*.Cincinnati, O.
(4) J. M. & I. R. R.: E. W. McKenna, *Supt*.Louisville, Ky.
Wm. Swanston, *M. M*. ...Jeffersonville, Ind.
Edw. Austin, *G. F. C. Shops*.Jeffersonville, Ind.
(5) Indianapolis & Vincennes R. R.
J. J. Turner, *Supt*........Indianapolis, Ind.
Robt. Curtis, *M. M*...............Columbus, O.
Pittsburg, Cleveland & Toledo R. R. In progress.
4-8¾ g. 43 m. 4 lo. 150 cars.
C. H. Andrews, *Pres*............Youngstown, O.
Pittsburg, Ft. Wayne & Chicago Ry. (*See Penna. Co.*)
Pittsburg Southern Ry. (*See Balt. & O.*)
Pitts. & Castle Shannon R. R. 3-4 g. 9 m. 5 lo. 428 c.
James M. Bailey, *Gen. Supt*.... Pittsburg, Pa.
Holmes Ward, *M. M*.......Castle Shannon, Pa.
Wm. E. Long, *M. C. B* ... . Pittsburg, Pa.
Pitts. & Lake Erie R. R. 4-8¾ g. 70 m. 31 lo. 1,820 c.
W. C. Quincy, *Gen. Man*.........Pittsburg, Pa.
R. W. Jones, *Mast. Trans*.......Pittsburg, Pa.
S. W. Haines, *M. M*........ .....Pittsburg, Pa.
Pitts. & Western R. R. 3 & 4-8½ g. 110 m. 18 lo. 365 c.
Pitts., Bradford & Buff. Ry. 3 g. 93 m. 8 lo. 163 c.
Tho. M. King, *Gen. Man*.........Allegheny, Pa.
J. T. Johnson, *Gen. Supt*........Allegheny, Pa.
C. P. Ford, *Pur. Agt*......... ..Allegheny, Pa.
Chas. Kennedy, *Asst. Supt. & M. M*. do.
Pontiac, Oxford & Pt. Austin R. R. 100 m. in progress.
Geo. W. Debevoise, *Gen. Supt*...Oxford, Mich.
Port Huron & No.-Western Ry. 3 g. 218 m. 14 lo. 288 c.
H. McMorran, *G. Man. & P. A*.Port Huron, Mich.
J. R. Wadsworth, *Supt*.. ...Port Huron, Mich.
Chas. Deifenbach, *M. M*......Port Huron, Mich.
Benj. Hillier, *M. C. B*........Port Huron, Mich.
Port Jervis & Monticello R. R. 6 g. 24 m. 3 lo. 13 c.
M. V. Heller, *Gen. Man*......Port Jervis, N. Y.
Port Royal & Augusta Ry. 5 g. 180 m. 16 lo. 310c
J. N. Bass, *Supt*...................Augusta, Ga.
T. F. Warwick, *M. M. & M. C. B*. Augusta, Ga
Portland & Ogdensburg. 4-8½ g. 110 m. 11 lo. 311 c.
J. Hamilton, *Gen. Supt. & P. A*..Portland, Me.
M. M....... ....Portland, Me.
W. G. Brewer, *M. C. B*... . ....Portland, Me.
Portland & Rochester R. R. 4-8½ g. 52 m. 7 lo. 230 c.
J. W. Peters, *Supt. & Pur Agt*.. Portland, Me.
E. H. C. Tompson, *For. of Mach*. Portland, Me.
David Dow, *For. of Car Repairs* .Portland, Me.
Potomac, Fred.'g & Pied. R. R. 3 g. 38 m. 2 lo. 38 c.
Will M. Grafton, *Supt*.... ..Fredericksburg, Va.
W. J. Sweigard, *M. M*.....Fredericksburg, Va.
Pough., Hart. & Bos. R. R. 4-8½ g. 45 m. 4 lo. 65 c.
J. A. Perkins, *Supt*........Poughkeepsie, N. Y.
John L. Donaldson, *M. M*. Poughkeepsie, N. Y.
Pratt Coal & Coke Company's R. R. 5 g. 9 m. 5 lo. 100 c.
W. L. Gude, *Gen. Man*....... Pratt Mines, Ala.
Prescott & Thirty-Fifth Parallel R. R.
4-8½ g. 77 miles in progress.
Samuel A. Henszey, *Gen. Man*..Prescott, Ariz.
Prince Edward Island Ry. 3-6 g. 199 m. 18 lo. 280 c.
Jas. Coleman, *Supt. & Pur. Agt.*;
Jos. Unsworth, *M. Supt. & Storekeeper*; and
D. M. Fraser, *M. C. B*.. .Charlottetown, P. E. I.
Profile & Franconia Notch R. R. 3 g. 15 m. 3 lo. 18 c.
Emmons Raymond, *Pur. Agt*... Boston, Mass.
C. H. Greenleaf, *Supt*......Profile House, N. H.
Prospect Park & Coney Island R. R.
4-8½ g. 15 m. 8 lo. 123 cars.
R. Schermerhorn, *Supt*.........Brooklyn, N. Y.
Martin Painter, *M. M*............Brooklyn, N. Y.
Prov., Warren & Bristol R. R. 4-8½ g. 19 m. 5 lo. 57 c.
Waterman Stone, *Supt*... .. ..Providence, R. I.
Rufus Smith, *M. M. & C. B*......... Bristol, R. I.
Prov. & Springfield R. R. 4-8½ g. 23 m. 4 lo. 92 c.
Wm. Tinkham, *Gen. Man*.....Providence, R. I.
G. T. Richardson, *M. M*........Providence, R. I.
Prov. & Worcester. 4-8½ g. 66 m. 34 lo. 1,155 c.
W. E. Chamberlain, *Supt* .....Providence, R. I.
A. Griggs, *Supt. L. & C. D*....Providence, R. I.
Pullman's Palace Car Co. 564 passenger cars.
A. B. Pullman, *2d V.-Pr. & G. M*.. Chicago, Ill.
Geo. F. Brown, *Gen. Supt*....... ...Chicago, Ill.
Wm. A. Angell, *Pur. Agt*...........Chicago, Ill.
S. W. Bretzfield, *Asst. Pur. Agt*. New York, N. Y.
A. Rapp, *Man*. (Chicago Works)...Chicago, Ill.
H. L. Spaulding, *Man*. (Det Shops). Detroit, Mich.
E. A. Benson, *Supt. Shops*.... .....St. Louis, Mo.

Q

Quebec Central Ry. 4-8½ g. 147 m. 10 lo. 207 cars.
A. Steele, *Supt*............... Sherbrooke, Que.
R. D. Morkill, *Pur. Agt*.......Sherbrooke, P. Q.
Jas. Seiveright, *M. M*. ...... Sherbrooke, P. Q.
Quebec, Montreal, Ottawa & Occidental Ry.
4-8½ g. 354 m. 36 lo. 993 cars.
L. A. Senecal, *Gen. Supt*........Quebec, Que.
Quebec & Lake St. John Ry. 4-8½ g. 36 m. 3 lo. 55 c.
J. G. Scott, *Manager*.............Quebec, Can.
Frank Fournier, *Supt*... ...St. Raymond, P. Q.
John T. Eames, *M. M*. ...St. Raymond, P. Q.
Queen Anne's & Kent and Townsend Branch R. R.
(*See Penna.*; (4) *Div.*)

R

Raleigh & Augusta Air-Line; Carolina Central.
Raleigh & Gaston R. Rs. 4-8½ g. 436 m. 48 lo. 994 c
John C. Winder, *Gen. Man. & P. A*.Raleigh, N. C.
Raleigh Rds. 4-8½ g. 194 m. 22 lo. 563 cars.
B. R. Harding, *Supt. of Mach*.Raleigh, N. C.
Carolina Cen. R. R. 4-8½ g. 242 m. 26 lo. 431 c.
L. C. Jones, *Gen. Supt*.....Wilmington, N. C.
James Maglenn, *M. of Mach*.Laurinburg, N. C.
S. R. Ethridge, *M. C. B* ... Laurinburg, N. C.
Rensselaer & Saratoga R. R. (*See Del. & Hud. Can. Co.*)
Rhinebeck & Connecticut. (*See Hart. & Ct. Wn.*)
Richmond, Fredericksburg & Potomac R. R.
4-8½ g. 83 m. 15 lo. 146 cars.
E. T. D. Myers, *Gen. Supt*..... Richmond, Va.
T. L. Courtney, *Asst. Supt*......Richmond, Va.
H. Kuhn, *M. M*....................Richmond, Va.
W. H. Trainham, *M. C. B*.........Richmond, Va.
Richmond & Alleghany R. R. 4-9 g. 261 m. 21 lo. 837c.
Decatur Axtell, *V. P. & Gen. Man*.Richmond, Va.
M. Sweeney, *Pur. Agt*.. ....Richmond, Va.
Geo. D. Harris, *M. M. & C. B*....Richmond, Va.
Richmond & Danville R. R. Co.'s Roads.
1,736 miles 218 loco. 3,833 cars.
A. L. Rives, *Gen. Man* ....Richmond, Va.
Peyton Randolph, *As. G. Man*..Richmond, Va.
J. P. Minetree, *Pur. Agt*......... Richmond, Va.
R. D. Wade, *Supt. Mo. Po*... ...Richmond, Va.
(1) Rich. & Dan. R. R. 5 g. 847 m. 131 lo. 2,687 cars.
Rich. & Dan. Div.: 5 g. 320 m. 80 lo. 1,797 c
Wm. H. Green, *Supt*...... ....Richmond, Va.
T. W. Gentry, *M. M*.... ....Richmond, Va.
J. B. Vaughan, *For. Car Sh*.. Richmond, Va.
North Carolina Div. 5 g. 223 m. 22 lo. 268 cars.
A. B. Andrews, *Supt*.... ....Raleigh, N. C.
W. H. Turrentine, *M. M*. Comp'y's Shops, N. C.
J. C. Holt, *For. Car Sh*. Comp'y's Shop N. C.
Atlanta & Char. Air Line. 5 g. 286m. 31 lo. 415 c.
Narrow-Gauge Branches. 3 g. 80 m. 5 lo. 41 c.
I. Y. Sage, *Supt*..... ....Atlanta, Ga.
W. A. Walden, *M. M*. .. .... Atlanta, Ga.
Z. T. Smith, *For. Car Sh*.... .... Atlanta, Ga.
(2) Charlotte, Col. & Aug. R. R. 5 g. 239 m. 22 lo. 287 c.
G. R. Talcott, *Supt*...........Columbia, S. C.
J. H. Green, *M. M*. (2 roads)...Columbia, S. C.
(3) Columbia & Greenville R. R. 5 g. 297 m. 22 l. 224 c.
G. S. Talcott, *Supt*.............Columbia, S. C.
J. O. Meredith, *For. E. & C. Rep*.. do.
(4) Virginia Midland Ry. 4-8½ g. 353 m. 41 lo. 631 c.
W. M. S. Dunn, *Eng. & Supt*.Alexandria, Va.
J. E. Waddey, *M. of M*......Alexandria, Va.
J. T. Nalls, *M. C. B*. ....Alexandria, Va.
Richmond & Petersburg R. R. 4-8½ g. 25 m. 8 lo. 132 c.
J. R. Kenly, *Supt*..... ....Richmond, Va.
John O'Brien, *M. M*..............Richmond, Va.
Rio Grande R. R. 3-6 g. 22 m. 3 lo. 40 cars.
M. J. Gomila, *Rec. & Gen. Man* Brownsville, Tex.
G. W. Rendall, *M. M*......... Brownsville, Tex.
M. Markwood, *M. C. B*... ....Brownsville, Tex.
Rio Grande & Pecos Ry. 4-8½ g. 27 m. In progress.
W. W. Hungerford, *Man*..........Laredo, Tex.
Rochester & Lake Ontario Ry. 4-8½ g. 6 m. 2 lo. 10 c.
N. B. Ellison, *Man*... ....Rochester, N. Y.
Rochester & Pittsb'g. R. R. 4-8½ g. 134 m. 21 lo. 1,251 c.
Geo. E. Merchant, *Gen. Man*...Rochester N. Y.
J. P. Hovey, *M. M*......... ....Rochester, N. Y.
J. R. Sherburne, *For. Sh*...... ..Buffalo, N. Y.
Rock Island & Mercer County R. R., and
Rock I'd & Peoria Ry. 4-8½ g. 113 m. 13 lo. 357 c.
R. R. Cable, *V.-P. & Gen. Supt*..Rock Island, Ill.
R. I. & P. Ry.: H. B. Sudlow, *Supt. & P. A*. do.
Joseph Elder, *M. M*.................Peoria, Ill.
R. I. & M. C. Rd.: B. T. Cable, *Supt*.R'k Island, Ill.
J. H. Parks, *M. M*............ .Rock Island, Ill.
Rogersville & Jefferson R. R. 5 g. 16 m. 1 lo. 6 cars.
C. M. Leuty, *Supt*........ Rogersville, Tenn.
Rome (Ga.) R. R. 5 g. 20 m. 2 lo. 17 cars.
Eben Hillyer, *Supt*.......... ..... Rome, Ga.
O. W. Harbin, *M. M. & C. B*......... Rome, Ga.
Rome, Watertown & Ogdensburg R. R.
4-8½ g. 417 m. 54 lo. 1,400 cars.
H. M. Britton, *Gen. Man. & P. A*.Oswego, N. Y.
Geo. H. Haselton, *M. M. & C. B*..Oswego, N. Y.
E'n Div.: J. D. Remington, *Supt*.Watertown, N. Y.
W'n Div.: W. H. Chauncey, *Supt*..Oswego, N. Y.
Roodhouse & Scottsville Ry. In progress.
Geo. P. Merrill, *Gen. Man*..........Chicago, Ill.
Ruby Hill R. R. (*See Eureka & Pal.*)
Rumford Falls & Buckfield R.R. 4-8½ g. 29 m. 2 l. 62 c.
L. L. Lincoln, *Supt*................. Canton, Me.
O. Spaulding, *Pur. Agt*...........Buckfield, Me.
E. R. Oldham, *M. M*.............Buckfield, Me.

S

Sabine & East Texas Ry. (*See Cen. Pac.*)
Sacramento & Placerville R. R. (*See Cen. Pac.*)
Saginaw Bay & Northw'n R. R. 4-8½ g. 31 m. 6 lo. 136 c.
J. Jackson, *Gen. Man*.... ...Pinconning, Mich.
F. T. Lillote, *Act. Pur. Agt*...Pinconning, Mich.
Edward Keeler, *M. M*........Pinconning, Mich.
Saginaw, Tuscola & Huron R. R.
3 g. 37 m. 3 lo. 83 cars.
C. S. McMillan, *Gen. Supt*..E. Saginaw, Mich.
Saginaw Valley & St. Louis R. R. 4-8½ g. 39 m. 4 l. 64 c
N. W. Merrill, *Supt* ....Saginaw, Mich.
Allan Bourn, *Pur. Agt*.. ... .Detroit, Mich.
Geo. C. Watrous, *M. M*.................Iona, Mich.
Salisbury R. R. 4-8½ g. 11 m. 1 lo. 1 car.
R. J. Batzer, *Supt*..............Pittsburgh, Pa.
Salt Lake & Western R. R. (*See Un. Pac.*; (6) *Div.*)
San Francisco & No. Pac. 4-8½ g. 139 m. 11 lo. 245 c.
Arthur Hughes, *Gen. Man*..San Francisco, Cal.
H. C. Whiting, *Supt*.... ....Petaluma, Cal.
Ed. Reynolds, *Gen. M. M*.........Donahue, Cal.
John Martin, *M. C. B*. .... Donahue, Cal.
Sanborn, Cooperstown & Turtle M. R. R. In progress.
C. A. Roberts, *Gen. Man*. .. .. Sanborn, Dak.
Sandy River R. R. 2 g. 18 m. 2 lo. 23 cars.
D. L. Dennison, *Supt*...............Phillips, Me.
M. Saunders, *M. M. & C. B*....... ..Phillips, Me.
Sandusky, Mansfield & Newark R. R. (*See B. & O.*)
Sanford & Indian River R. R. (*See So. Flor.*)
San Luis Obispo & Santa Maria R. R.
3 g. 20 m. 2 lo. 30 cars.
Charles Goodall, *Man*......San Francisco, Cal.
San Pete Valley R. R. 3 g. 33 m. 2 lo. 57 cars.
F. C. Hand, *Supt*..................Wales, U. T.
J. E. Bamberger, *Pur. Agt*.... Salt Lake, U. T.
B. Bates, *M. M*...................... .Wales, U. T.
Santa Cruz R. R. (*See So. Pac.*; *Nor'n Div.*)
Saratoga, Mt. McGregor & Lake George R. R.
3 g. 11 m. 3 lo. 12 cars.
John McGee, *Supt*. ....Saratoga Springs, N. Y.
Savannah, Florida & W'n Ry. 5 g. 425 m. 50 lo. 736 c.
H. S. Haines, *Gen. Man*........Savannah, Ga.
R. G. Fleming, *Supt*... ....Savannah, Ga.
F. S. Pendergast, *Ch. Eng*........Savannah, Ga.
A. A. Aveilhé, *Pur. Agt*..........Savannah, Ga.
G. M. D. Riley, *M. of Mach*.... .Savannah, Ga.
Jos. W. Rowell, *For. Car Dept*. Savannah, Ga.
Sav., Griffin & No. Ala. R. R. *Op. by Central (Ga.)*.
Savannah, Skiddaway & Seaboard R. R.
5 g. 12 m. 3 lo. 12 cars.
Edward J. Thomas, *Supt* ......Savannah, Ga.
R. F. Brown, *M. M*. ... .Savannah, Ga.
G. W. Mattan, *M. C. B*..........Savannah, Ga.
Schuylkill & Lehigh R. R. (*See Phil. & Read.*)
Schoharie Valley R. R. (*See Middleburg & Sch.*)
Scioto Valley R. R. 4-8¾ g. 132 m. 17 lo. 564 cars.
Geo. Skinner, *Supt*. . ...Columbus, O.
R. Bromley, *M. M. & P. A*......Portsmouth, O.
Seaboard & Roanoke R. R. 4-8½ g. 80 m. 21 lo. 384 c.
E. G. Ghio, *Mast. of Trans*....Portsmouth, Va.
J. A. Walton, *Pur. Agt*. ......Portsmouth, Va.
M. M. Pendleton, *S. M. P. & M*. Portsmouth, Va.
Sedalia, Warsaw & Southern Ry. (*See Mo. Pac.*)
Sharpsville R. R. 4-8½ g. 23 m. 3 lo. 13 cars.
Walter Pierce, *Gen. Man*.......Sharpsville, Pa.

Shenandoah Valley R. R. 4-9 g. 240 m. 32 lo. 849 c.
Norfolk & Western R. R. 5 g. 486 m. 82 lo. 1,779 c.
J. H. Sands, *Supt* .... .Roanoke, Va.
W. C. De Armond, *Pur. Agt*. ..Philadelphia, Pa.
Chas. Blackwell, *Supt. of M. P*...Roanoke, Va.
Sh. Val. Rd.: D. W. Flickwir, *Supt*..Roanoke, Va.
W. Welch, *M. M*.......... ....Roanoke, Va.
N. & W.; W. Div.: Frank Huger, *Supt.*; and
F. Sterk, *M. M*................Lynchburg, Va.
N. & W.; E. Div.: N. M. Osborne, *Supt.*; and
J. T. Robinett, *M. M. & C. B*...Petersburg, Va.
Shenango & Allegheny R. R. 4-9½ g. 57 m. 8 lo. 248 c.
J. T. Blair, *G. Man. & Pur. Agt*. Greenville, Pa.
Edw. Richardson, *M. M. & C. B*. Greenville, Pa.
Shepaug R. R. 4-8½ g. 38 m. 3 lo. 28 cars.
Edwin McNeill, *Supt*.................Litchfield, Ct.
C. M. Allen, *M. M*. .... Litchfield, Ct.
Ship Is., Ripley & Ky. R. R. 3 g. 25 m. 2 lo. 23 cars.
C. L. Harris, *Supt. & Pur. Agt*.... Ripley, Miss.
W. H. Phelps, *M. M*......................Ripley, Miss.
Silver City, Deming & Pacific R. R. 3 g. 47 m. 31. 141 c.
John W. Smith, *Gen. Supt*... Silver City, N. M.
Silver Lake Ry. 4-8½ g. 6 m. 1 lo. 4 cars.
E. G. Matthews, *Supt*... .... Perry, N. Y.
Sinaloa & Durango R. R. 4-8½ g. 38 m. 2 lo. 40 cars.
H. M. Fickinger, *Supt*. .. Altata, Sinaloa, Mex.
Wm. P. Dutton, *M. M*. .... Culiacan, Mex.
Skaneateles R. R. 4-8½ g. 5 m. 2 lo. 5 cars.
J. McNamara, *Supt* Skaneateles, N. Y.
Sioux City & Pacific R. R. 4-8½ g. 427 m. 28 lo. 785 c.
P. E. Hall, *Gen. Man. & P. A*. Cedar Rapids, Ia.
C. M. Lawler, *Gen. Supt* Missouri Valley, Ia.
J. S. Wattles, *Supt*.... ... Missouri Valley, Ia.
C. F. McCoy, *Asst. Supt*....... .... Blair, Neb.
S. A. Teal, *M. M*.... .... Missouri Valley, Ia.
W. H. Ramseyer, *M. C. B*. . Missouri Valley, Ia.
Smyrna & Delaware Bay R. R. (*See Kent County.*)
Sodus Bay & Southern Ry. 4-8½ g. 34 m. 4 lo. 40 c.
G. A. Stearns, *Gen. Man*. . Sodus Point, N. Y.
S. B. Stuart, *Supt. & Pur. Agt*.Sodus Point, N. Y.
J. C. Thomas, *M. M*... .....Sodus Point, N. Y.
C. H. Hill, *M. C. B* ....Sodus Point, N. Y.
Somerset R. R. 4-8½ g. 25 m. 3 lo. 24 cars.
W. M. Ayer, *Supt & Pur. Agt*. W. Waterville, Me.
C. Crowell, *M. C. B*.. .... No. Anson, Me.
Somerset & Cambria R. R. (*See B. & O.*)
Sonora Ry. (*See A., T. & S. Fe.*)
South & North Alabama R. R. (*See Louis. & Nash.*)
South Carolina Ry. 5 g. 246 m. 42 lo. 742 cars.
John B. Peck, *Gen. Man*. ......Charleston, S. C.
S. B. Pickens, *Pur. Agt*........Charleston, S. C.
P. J. Cochrane, *Mast. of Mach*.Charleston, S. C.
Geo. H. Gramling, *M. C. B*....Charleston, S. C.
South-Eastern Ry. 4-8½ g. 260 m. 26 lo. 826 cars.
T. A. McKinnon, *Gen. Man*.....Montreal, Can.
A. G. Eastman, *M. M*.... ..W. Farnham, P. Q.
South Florida R. R. 3 gauge 40 m. 5 lo. 53 cars.
B. R. Swoope, *Supt. & P. A*...... Sanford, Fla.
C. C. Haskell, *Pur. Agt*....... ...Sanford, Fla.
J. A. Campbell, *M. M*..............Sanford, Fla.
A. D. Stentiford, *M. C. B*..........Sanford, Fla.
South Mountain R. R. 4-8½ g. 18 m. 4 lo. 22 c.
W. H. Woodward, *Supt*. Pine G've Furnace, Pa.
South Pacific Coast R. R. 3 g. 81 m. 14 lo. 500 cars
Geo. Revett, *Gen Supt*... .San Francisco, Cal.
G. H. Waggoner *Pur. Agt*..San Francisco, Cal.
E. L. Reese, *M. M. & C B*.. ....Newark, Cal.
South-Western R. R. (Ga.) (*See Central of Ga.*)
South-Western Ry. (Ky.) 4-8½ g. 4 m. 1 lo. 38 cars.
J. M. Wilson, *Supt*.............Harrodsburg, Ky.
J. Tomlinson, *Pur. Agt*......Harrodsburg, Ky.
Southern Central R. R. 4-8½ g. 156 m. 21 lo. 467 c.
James G. Knapp, *Supt. & Pur Agt*. Auburn, N. Y.
Chas. G. Brown, *M. M*... ...Auburn, N. Y.
H. Mooney, *M. C. B*................Auburn, N. Y.
Southern Kansas Ry. (*See At., Top. & Santa Fe.*)
Southern Maryland R. R. 4-8½ g. 20 m. 1 lo. 20 c.
Robert Knight, *Supt*. ....Brandywine, Md.
C. R. Joyce, *M. M*......... .. Brandywine, Md.
Southern Pacific R. R. 4-8½ g. 198 m. 30 lo. 728 c.
Northern Div. (*For other Divs. see Cen. Pac.*)
A. C. Bassett, *Supt*.......San Francisco, Cal.
J. R. Watson, *Pur. Agt*.....Sacramento, Cal.
J. T. Wilson, *M. M*..... ..San Francisco, Cal.
F. N. Bellisle, *M. C. B*. ...San Francisco, Cal.
Southern Pacific R. R. of Arizona. (*See Cen. Pac.*)
Southern Pacific R. R. of New Mexico. (*See Cen. Pac.*)
Spartanburg, Union & Columbia R. R.
(*See Rich. & Dan.*; (3) *Div.*)
Spring Brook R. R. 4-3 g. 8 m. 1 lo. 18 cars.
Charles Pugh, *Pres*........ ... ..Pittston, Pa.
Spring Hill & Parrsboro Ry. (*See Cumberland.*)
Springfield, Effingham & So.-E'n Ry. (*See Ind. & Ill.*)
Springville & Sardinia Ry. 4-8½ g. 12 m. 1 lo. 8 c.
Bertrand Chaffee, *Pres*..... ..Springville, N. Y.
St. Croix & Penobscot R. R. 4-8½ g. 22 m. 4 lo. 195 c.
S. W. Haycock, *Supt. & Pur. Agt*. .Calais, Me.
G. H. Corsen, *M. M*.... .. ..Milltown, Me.
H. C. Tincker, *M. C. B*...........Milltown, Me.
St. John & Maine Ry. (*See New Brunswick.*)
St. John's Ry. 4-8½ g. 14½ m. 2 lo. 24 cars.
R. McLaughlin, *Pr. & Supt*. .Jacksonville, Fla.
Geo. Ferro, *M. of Mach*.. ....Tocoi, Fla.
St. John's & Lake Eustis Ry. 3 g. 26 m.
W. J. Jarvis, *Supt*............. Ft. Mason, Fla.
St. Johnsb'ry & Lake Champ 4-8½ g. 120 m 10 lo. 372 c.
A. B. Jewett, *Supt. & P. A*..St. Johnsbury, Vt.
Geo. E. Howe, *M. M. & C. B*.St. Johnsbury, Vt.
St. Joseph Valley R. R. 3 g. 15 m. 1 lo. 11 cars.
J. H. Matthews, *Gen. Supt*.Berrien Springs, Mich.
St. Joseph & Des Loge Ry. 3 g. 13 m. 3 lo. 64 cars.
T. T. Onderdonk, *Supt*..... Bonne Terre, Mo.
St. Joseph & Western R. R. (*See Union Pac.*; (1) *Div.*)
St. Joseph & Des Moines R. R. (*See K. C., St. J. & C. B.*)
St. Lawrence & Ottawa Ry. (*See Can. Pac.*)
St. Louis, Alton & Terre Haute R. R.
Main Line. (*See C., C., C. & I.*; *Ind. & St. L. Div.*)
St. Louis & Cairo Div.: 4-8½ g 137 m. 17 lo. 800 c.
G. W. Parker, *Gen. Man* ....St. Louis, Mo.
J. L. Hinckley, *Supt*... ... .Belleville, Ill.
A. M. De Clerq, *M. M*..........St. Louis, Mo.
St. Louis Bridge Co. and Tunnel R. R.
4-8½ g. 31 m. 18 lo. 11 cars.
Wm. Taussig, *Gen. Man* ....St. Louis, Mo.
A. W. Dickinson, *Supt*.... .... St. Louis, Mo.
J. E. Williams, Jr., *Pur. Agt*....St. Louis, Mo.
H. M. Smith, *M. M*.... ....St. Louis, Mo.
St. Louis Coal R. R. 4-8½ g. 93 m. 10 lo. 217 cars.
Jas. Prentice, *Supt*................Carbondale, Ill.
Jas. C. Bryden, *Pur. Agt*... ....St. Louis, Mo.
St. Louis, Des Moines & Northern Ry. 4-8½ g. 43 m.
C. F. Merk, *Supt*.. ....Des Moines, Ia.
St. L., Ft. Scott & Wichita R. R. 4-8½ g. 130 m 6 l. 337 c.
F. Tiernan, *V. P. & Gen. Man*..Fort Scott, Kan.
J. W. Miller, *Gen. Supt*........Fort Scott, Kan.
A. Popkess, *Pur. Agt*...... ...Fort Scott, Kan.
Henry Berger, *M. M* ....Ft. Scott, Kan.
A. A. Tiddell, *M. C. B*. ....Ft. Scott, Kan.
St. L., Hannibal & Keokuk. 4-8½ g. 85 m. 5 lo. 70 c.
W. W. Walker, *Gen. Supt*....... Hannibal, Mo.
Geo. Douglass, *Pur. Agt*......... Hannibal, Mo.
St. Louis, Iron Mt. & So'n Ry. (*See Mo. Pac.*; (4) *Div.*)
St. L., Keokuk & No.-W'n. Ry. (*See C., B. & Q.*)
St. L., Salem & Little Rock. 4-9 g. 72 m. 5 lo. 111 c.
H. A. Crawford, *V. Pr. & P. A*...St. Louis, Mo.
E. B. Sankey, *Supt*....................Salem, Mo.
Thomas Everson, *M. M*. ....Steelville, Mo.
J. W. Houston, *M. C. B*...........Steelville, Mo.
St. L., Van. & T. Haute R. R. (*See Penna. Co.*; (10) *Div.*)
St. Louis & Cairo R. R. 3 g. 152 m. 22 lo. 896 cars.
Chas. Hamilton, *Gen. Supt*..... .St. Louis, Mo.
R. M. Pringle, *M. M*............... St. Louis, Mo.
St. L. & San Fran. Ry. 4-8½ g. 854 m. 103 lo. 3,258 c.
C. W. Rogers, *V. P. & Gen. Man*..St. Louis, Mo.
D. H. Nichols, *Mast. Tran*..No. Springfield, Mo.
A. G. Thompson, *Pur. Agt*....... St. Louis, Mo.
M. Kearney, *M. M. & C. B*..No. Springfield, Mo.
Mo. & Ark. Div.: W. A. Thoms, *Supt*. do
Kan. Div.: J. R. Wentworth, *Supt*. Neodesha, Kan.
St. Martin's & Upham Ry. 4-8½ g. 30 m. 2 lo. 8 cars.
A. E. Killam, *Manager* .... St. Martin's, N. B.
St. Paul, Minneapolis & Manitoba Ry.
4-8½ g. 1,326 m. 201 lo. 5,068 cars.
A. Manvel, *Gen. Man*............ St. Paul, Minn.
E. B. Wakeman, *Asst. Gen. Supt*. St. Paul, Minn.
J. C. Morrison, *Pur. Agt*......... St. Paul, Minn.
H. Middleton, *M. M. & C. B* ... St. Paul, Minn.
Breck. Div.: W. S. Kemp, *Supt*... St. Paul, Minn.
F. F. Div.: J. B. Rice, *Supt*........ St. Paul, Minn.
No'n Div.: A. Guthrie, *Supt*..... Crookston, Minn.

St. Paul & Duluth R.R. 4-8½ g. 196 m. 34 lo. 980 c.
H. P. Breed, *Gen. Supt.*........St. Paul, Minn.
J. G. Callahan, *Pur. Agt*........St. Paul, Minn.
W. McFarland, *M. M*........St. Paul, Minn.
John Hill, *M. C. B.*........St. Paul, Minn.
State Line & Sullivan R. R. 4-8½ g. 25 m. 3 lo. 263 c.
I. O. Blight, *Supt*........Towanda, Pa.
Staten Island R. R. 4-8½ g. 13 m. 4 lo. 18 c.
J. W. Wilbur, *Supt*........New York, N. Y.
Stony Clove & Catskill Mountain R. R.
3 g. 14 m. 2 lo. 21 cars.
Geo. Coykendall, *Gen. Supt*....Rondout, N. Y.
Stony Creek R. R. 4-8½ g. 11 m.
Geo. B. Boggs, *Supt*........Norristown, Pa.
Sterling Mountain Ry. 6 g. 8 m. 2 lo. 145 cars.
J. C. Missimer, *Supt*........Sloatsburg, N. Y.
Suffolk Lumber R. R. 3 g. 15 m. 3 lo. 41 cars.
W. M. Whaley, *Supt.*........Suffolk, Va.
Summit Branch R. R. 4-9 g. 20 m. 7 lo. 10 cars.
Thomas Gucker, *Supt*........Williamsport, Pa.
Susquehanna & Delaware River R. R. In progress.
D. Y. Kilgore, *Pres.*........Philadelphia, Pa.
Sussex R. R. (*See Del., Lack. & West.*)
Syracuse, Binghamton & N. Y. R. R. (*See D. L. & W.*)
Syr., Ontario & N. Y. R. R. (*See N. Y., W. Sh. & Buf.*)
Syracuse, Geneva & Corning; Corning, Cowanasque & Antrim R. Rs. 4-8½ g. 142 m. 28 lo. 1,044 c.
A. H. Gorton, *Supt*........Corning, N. Y.
W. E. Gorton, *Asst. Supt*........Corning, N. Y.
Andrew Beers, *Pur. Agt*........Corning, N. Y.
O. C. Patchell, *M. M*........Corning, N. Y.
C. J. Butler, *M. C. B*........Corning, N. Y.

T

Tawas & Bay County R. R. 3-2 g. 28 m. 2 lo. 100 c.
Henry Clark, *Gen. Supt*.....Tawas City, Mich.
Tennessee Coal R. R. 5 g. 28 m. 8 lo. 204 cars.
A. M. Shook, *Gen. Man*.....Tracy City, Tenn.
W. A. Knight, *M. M*........Tracy City, Tenn.
Tennessee & Sequatchee Valley R. R.
3 g. 42 m. 1 lo. 24 cars.
Isaac Britton, *Gen. Supt.*........Jewett, Tenn.
P. V. Mooney, *Pur. Agt*.....Spring City, Tenn.
Terre Haute & Indianapolis R. R.
4-9 g. 387 m. 88 lo. 3,702 cars.
Joseph Hill, *Gen. Supt*........St. Louis, Mo.
C. R. Peddie, *P. Agt*........St. Louis, Mo.
Geo. H. Prescott, *S. M. P. & M.* Terre Haute, Ind.
E. D. Carter, *M. C. B*......Terre Haute, Ind.
Clinton Idler, *M. M.*........Indianapolis, Ind.
Chas. Butler, *M. M*........Effingham, Ill.
A. W. Quakenbush, *M. M.*..Logansport, Ind.
Terre Haute & Logansport. (*See Penn. Co.; (10) Div.*)
Terre Haute & So.-Eastern Ry. 4-9 g. 44 m. 2 lo. 145 c.
Geo. Atherton, *Supt*........Terre Haute, Ind.
Texas Central Ry. (*See Hous. & Tex. Cen.*)
Texas-Mexican Ry. (*See Mex. Nat.*)
Texas Trunk R. R. 4-8½ g. 36 m. 2 lo. 8 cars.
Hugh Irwin, *Gen. Supt*........Dallas, Tex.
Texas Western Ry. 3 g. 52 m. 2 lo. 44 cars.
E. L. Heriot, *Gen. Man.*......Houston, Tex.
J. W. Goodwin, *Supt*........Houston, Tex.
T. F. Glispin, *M. M*........Houston, Tex.
Texas & N. O. R. R. (*See Cen. Pac.; G. H. & S. A. Div.*)
Texas & Pacific. (*See Mo. Pac. Ry.; (6) Div.*)
Texas & St. Louis Ry. 3 g. 672 m. 66 lo. 1,382 cars.
W. R. Woodard, *Gen. Man.*.....St. Louis, Mo.
F. W. Paramore, *Pur. Agt*.....St. Louis, Mo.
G. W. Prescott, *S. M. P. & M*...St. Louis, Mo.
A. E. Buchanan, *Supt. Trans*......Tyler, Tex.
Tex. Div.: A. L. Horner, *Supt*......Tyler, Tex.
Tionesta Valley R. R. 3 g. 7 m.
George Dickinson, *Gen. Supt*....Sheffield, Pa.
Tioga and Elmira State Line R. Rs.
4-8½ and 6 g. 67 m. 18 lo. 960 cars.
R. Dupuy, *Supt*........Blossburg, Pa.
J. A. Hardenburg, *Pur. Agt*.. New York, N. Y.
Pere Bonny, *M. M*........Blossburg, Pa.
D. H. Stratton, *M. C. B*......Blossburg, Pa.
Toledo, Ann Ar. & Gr. Tr. Ry. 4-8½ g. 63 m. 9 lo. 186 c.
J. M. Ashley, *Gen. Man*.....Ann Arbor, Mich.
H. W. Ashley, *Supt. & Pur. Agt.* do
C. C. Dodge, *M. M*........Ann Arbor, Mich.
Toledo, Cin. & St. Louis R. R. 3 g. 798 m. 63 lo. 2,509 c.
E. P. Murray, *Gen. Supt*........Toledo, O.
F. W. Stewart, *P. Agt*........Toledo, O.
L. W. James, *Supt. Mach*........Toledo, O.
C. H. Mead, *Gen. M. C. B*........Delphos, O.
Toledo Div.: W. H. Vandergrift, *Supt.*; do
J. G. Clifford, *M. M*........Delphos, O.
Del. & Cin. Divs.: C. A. Bell, *Supt*......Cin., O.
T. J. Hamer, *M. M*........Cincinnati, O.
So. Ea'n Div.: A. W. Salter........Dayton, O.
L. Parisoe, *M. M*........Dayton, O.
St. Louis Div.: M. B. Mann........Charleston, Ill.
Toledo & Indianapolis R. R. 4-8½ g. 43 m. 4 lo. 118 c.
J. B. Clark, *Gen. Supt*........Toledo, O.
T. Cook, *Supt. of M. P*........Toledo, O.
Toledo & South Haven R. R. (*See Paw Paw.*)
Tonawanda Val. & Cuba R. R. (*See Brad., B & K.*)
Toronto, Grey & Bruce Ry. 4-8½ g. 191 m. 28 l. 446 c.
Edmund Wragge, *Gen. Man*.....Toronto, Can.
W. Watson, *Pur. Agt*........Toronto, Can.
David Preston, *M. M*........Toronto, Can.
Toronto & Nipissing Ry. (*See Mid. Ry. of Can.*)
Troy & Boston R. R. 4-8½ g. 48 m. 20 lo. 484 cars.
D. Robinson, *Pres. & Pur. Agt*......Troy, N. Y.
Joseph Crandell, *Supt*........Troy, N. Y.
Z. B. Davis, *M. M*........Troy, N. Y.
R. V. Coon, *M. C. B*........Troy, N. Y.
Troy & Greenfield R. R. 4-8½ g. 44 m.
A. W. Locke, *Man*........North Adams, Mass.
Tuckerton R. R. 4-8½ g. 31 m. 2 lo. 29 cars.
J. J. Pharo, *Supt. & Pur. Agt.* Tuckerton, N. J.

U

Ulster & Delaware R. R. 4-8½ g. 74 m. 10 lo. 214 cars.
Jas. H. Jones, *Supt*........Rondout, N. Y.
Joseph Rush, *M. M*........Rondout, N. Y.
John H. Decker, *M. C. B*........Rondout, N. Y.
Union Pacific Ry. (7 Gen. Divs.)
3 & 4-8½ g. 4,551 m. 510 lo. 10,550 cars.
S. H. H. Clark, *Gen. Man*........Omaha, Neb.
Thos. L. Kimball, *Asst. Gen Man.* Omaha, Neb.
M. H. Goble, *Pur. Agt*........Omaha, Neb.
I. H. Congdon, *S. M. P. & C. D*...Omaha, Neb.
John Wilson, *Asst. do*........Omaha, Neb.
(1) Neb. Div.: P. J. Nichols, *Gen. Supt*..Omaha, Neb.
E. Div.: C. B. Havens, *Supt*......Omaha, N. B.
R. McConnell, *M. M*........Omaha, Neb.
A. M. Collett, *M. C. B*........Omaha, Neb.
St. J. & W. Div.: L. D. Tuthill, *Supt.* St. Joseph, Mo.
E. Sleppy, *M. M*........G. Island, Neb.
Moun. Div.: W. S. Deuel, *Supt*..Cheyenne, W. T.
J. H. McConnell, *M. M.*......N. Platte, Neb.
R. McDougall, *M. M.*......Cheyenne, W. T.
(2) Wy. Div.: E. Dickenson, *Gen. Supt*..Laramie, W. T.
T. E. Lewis, *M. M*........Laramie, W. T.
T. A. Davis, *M. M*........Rawlins, W. T.
Wes. Div.: C. E. Wurtelle, *Supt.* Evanston, W. T.
Geo. F. Chapman, *M. M*......Evanston, W. T.
(3) Idaho Div.: W. B. Doddridge, *Gen. Supt.* Ogden, U.
F. Rearden, *M. M*........Pocatello, Id.
Ogden Short Line Div.:
R. Bickensderfer, *Supt*........Pocatello, Id.
W. H. Lewis, *M. M*........Montpellier, Id.
Utah & Northern Div.:
W. P. P. St. Clair, *Supt*........Eagle Rock, Id.
R. Croft, *M. M*........Logan, Utah.
F. Reardon, *M. M*........Eagle Rock, Id.
(4) Col. Cent. Div.: A. A. Egbert, *Gen. Supt.* Denver, Col.
F. Meirtsheimer, *M. M*........Denver, Col.
C. C. Div.: P. Touhy, *Supt*........Denver, Col.
So. Park Div.: G. W. Evans, *A. Supt*..Como, Col.
(5) Kan. Div.: S. T. Smith, *G. Supt*..Kansas City, Mo.
K. Val. Div.: J. O. Brinkerhoff, *Supt.* Kan. C'y, Mo.
Jas. Mackenzie, *M. M*........Armstrong, Kan.
Kansas Central Div.:
W. T. Kelley, *Supt*........Leavenworth, Kan.
Smoky Hill Div.:
O. H. Dorance, *Supt*........Wallace, Kan.
J. B. Dailey, *M. M*........Ellis, Kan.
(6) Salt Lake & Western Div.:
W. W. Ritter, *Supt*......Salt Lake City, Utah.
(7) Nevada Central Ry. 3 g. 93 m. 4 lo. 78 cars.
F. W. Dunn, *Gen. Supt. & P. A.* Battle Mt., Nev.
Z. T. Sprigg, *M. M*......Battle Mountain, Nev.
United States Rolling Stock Co. 23 lo. 4,834 cars.
A. Hegewisch, *Pres*........New York, N. Y.
W. H. Chaddock, *Pur. Agt*........Chicago, Ill.
Upson County R. R. (*See Central of Ga.*)
Utah Central Ry. 4-8½ g. 280 m. 21 lo. 358 cars.
John Sharp, *Gen. Supt*...Salt Lake City, Utah.
S. H. Hill, *Pur. Agt*......Salt Lake City, Utah.
W. B. Armstrong, *M. M*..Salt Lake City, Utah.
Peter Reid, *M. C. B*......Salt Lake City, Utah.
Utah & Nevada Ry. 3 g. 37 m. 3 lo. 33 cars.
W. W. Ritter, *Gen. Man*...Salt Lake City, Utah.
Robert Anderson, *M. M*...Salt Lake City, Utah.
Utah & Northern Ry. (*See Union Pac.; (3) Div.*)
Utah & Pleasant Valley Ry. (*See Den. & Rio. Gr.*)
Utica, Ithaca & Elmira Ry. 4-8½ g. 120 m. 11 lo. 152 c.
C. R. Fitch, *Supt*........Elmira, N. Y.
C. J. Howe, *M. M. & M. C. B*..Breesport, N. Y.
Utica, & Black Riv. R. R. 4-8½ g. 180 m. 22 lo. 452 c.
J. F. Maynard, *Gen. Supt. & P. A.*.Utica, N. Y.
John Bailey, *M. M*........Utica, N. Y.
David James, *M. C. B*........Utica, N. Y.

V

Vaca Vall. & Clear Lake R. R. 4-8½ g. 30 m. 2 lo. 19 c.
G. B. Stevenson, *Gen. Supt*.....Vacaville, Cal.
Valley Ry. (Ohio) 4-8¾ g. 85 m. 15 lo. 581 cars.
J. E. Turk, *Supt. & P. Agt*........Cleveland, O.
Chas. Blanchard, *M. C. B*........Cleveland, O.
Valley R. R. Va. 4-8½ g. 26 m.
S. Spencer, *Pres*........Baltimore, Md.
Vermont Valley R. R. (*See Conn. River.*)
Vicksburg & Brunswick R. R. (*See Cen. of Ga.*)
Vicksburg & Meridian R. R. (*See Cin., N. O. & Tex. Pac.*)
Vicks. Shreveport & Pac. R. R. (*See C., N. O. & T. P.*)
Victoria Ry. (*See Midland Ry. of Can.*)
Virginia Midland Ry. (*See Rich. & Dan.; (4) Div.*)
Virginia & Truckee R. R. 4-8½ g. 54 m. 17 lo. 375 c.
Carson & Colorado R. R. 3 g. 234 m. 6 lo. 134 c.
H. M. Yerington, *Gen. Supt*.....Carson, Nev.
R. J. Laws, *Supt.* (C. & Col.)..Hawthorne, Nev.
Hume Yerington, *Pur. Agt*........Carson, Nev.
I. N. Fording, *M. M*........Carson, Nev.
B. F. Lyon, *M. C. B*........Carson, Nev.

W

Wabash, Chester & W'n R. R. (*See St. Louis Coal.*)
Wabash, St. Louis & Pacific Ry. (4 Gen. Divs.
4-8½ g. 3,241 m. 598 lo. 17,230 cars.
John C. Gault, *2d V. P*........St. Louis, Mo.
Robert Andrews, *Gen. Supt*.....St. Louis, Mo.
R. B. Lyle, *Pur. Agt*........St. Louis, Mo.
Jacob Johann, *Gen. M. M*......Springfield, Ill.
U. H. Kohler, *Gen. M. C. B*........Toledo, O.
(1) Eas'n Div.: G. W. Stevens, *Supt*........Peru, Ind.
J. B. Barnes, *M. M*........Fort Wayne, Ind.
John McKenna, *M. M*........Peru, Ind.
Cairo Div.: D. G. Moore, *Asst. Supt*...Cairo, Ill.
W. S. Morris, *M. M*........Carmi, Ill.
Rant'l Div.: B. F. Mathias, *Asst. Supt.* Rantoul, Ill.
J. McCarthy, *M. M*........Rantoul, Ill.
(2) Middle Div.: H. F. Clark, *Supt*....Springfield, Ill.
B. B. Rose, *M. C. B*........Decatur, Ill.
F. L. Tomkins, *Asst. Supt*........Forest, Ill.
F. D. Schermerhorn, *Asst. Supt*..Quincy, Ill.
(3) Northern Div.: E. N. Armstrong, *Supt.* Peoria, Ill.
C. S. Lape, *M. M*........Tilton, Ill.
R. M. Hemphill, *M. C. B*........Peoria, Ill.
E. B. Hyde, *Asst. Supt*........Havana, Ill.
(4) Western Div.: R. S. Miner, *Supt*....Moberly, Mo.
W. H. Selby, *M. M*........Moberly, Mo.
C. S. Buck, *M. C. B*........Moberly, Mo.
E. Dresser, *Asst. Supt*........Stanberry, Mo.
J. S. Hazen, *M. C. B*........Stanberry, Mo.
D. Moin. Div.: C. F. Meek, *A. Supt.* Des Moines, Ia.
Walden's Bridge R. R. 3 g. 23 m. 3 lo. 37 cars.
John G. Scott, *Gen Man*...Jenks P. O., Tenn.
Walkill Ry. (*See N. Y., West. Sh. & Buf.*)
Walla Walla & Columbia Riv. R. R. (*See Ore. Ry.*)
Walton R. R. 5 g. 10 m. 1 lo. 7 cars.
D. H. Walker, *Pres*........Monroe, Ga.
Warren & Farnsworth Valley R. R.
3 g. 11 m. 3 lo. 39 cars.
A. D. Wood, *Supt*........Warren, Pa.
Warwick Valley R. R. (*See Leh. & Hud. River.*)
Wasatch & Jordan Valley R. R. (*See Den. & Rio. Gr.*)
Washington, Ohio & West. R. R. 4-8½ g. 52 m. 5 lo. 87 c.
S. M. Brophy, *Supt*........Alexandria, Va.
Edward Dunn, *M. M*........Alexandria, Va.
John Harrison, *M. C. B*........Alexandria, Va.
Waynesburg & Washington Rd. 3 g. 29 m. 3 lo. 26 c.
C. E. Bower, *Supt*........Waynesburg, Pa.
A. M. Kline, *M. C. B*........Waynesburg, Pa.
Welland Ry. 4-8½ g. 25 m. 4 lo. 147 cars.
William Pay, *Supt*........St. Catharines, Ont.
Jas. Taylor, *M. M*........St. Catharines, Ont.
Wm. H. Pay, *M. C. B*......St. Catharines, Ont.
West End Narrow Gauge Ry. 3 g. 16 m. 3 lo. 13 c.
Rolla Wells, *Supt*........St. Louis, Mo.
M. M. Hodgman, *M. M*........Florissant, Mo.
West Feliciana R. R. 4-8½ g. 27 m. 2 lo. 22 cars
J. B. McGehee, *Pr. & Gen. Supt.* Bayou Sara, La.
J. A. Tilton, *M. M. & C. B*.....Bayou Sara, La.
W. Va., Central & Pittsb'g Ry. 4-8½ g. 24 m. 4 lo. 114 c.
W. E. Porter, *Gen. Supt*......Piedmont, W. Va.
Geo. W. Harrison, *Pur. Agt*...Piedmont, W. Va.
E. W. Lippencott, *M. M. & M. C. B.* Piedmont
West & East R. R. (*See Ill. Cen.; N. O. Div.*)
West Jersey R. R. (*See Penn. R. R.; (3) Div.*)
Western R. R. (of Ala.) 5 g. 138 m. 15 lo. 270 cars
Atlanta & W. Point Rd. 5 g. 87 m. 14 lo. 240 c.
Cecil Gabbett, *Gen. Man. & Supt*...Mont., Ala.
C. D. Wall, *M. M*........Montgomery, Ala.
F. M. Wade, *M. C. B*........Montgomery, Ala.
Western Counties' Ry. 4-8½ g. 67 m. 8 lo. 137 cars.
J. Brignell, *Supt*........Yarmouth, N. S.
Western Maryland R. R. 4-8½ g. 157 m. 25 lo. 439 c.
J. M. Hood, *Pr. & Gen. Man*....Baltimore, Md.
R. J. Adair, *Pur. Agt*........Baltimore, Md.
David Holtz, *Mast. of Mach.*.Union Bridge, Md.
J. H. Nussear, *M. C. B*......Union Bridge, Md.
Western No. Carolina R. R. 5 g. 210 m. 17 lo. 160 c.
V. E. McBee, *Supt*........Salisbury, N. C.
Jos. P. Minetree, *Pur. Agt*......Richmond, Va.
G. W. Gates, *M. M*........Salisbury, N. C.
Western & Atlantic R. R. 5 g. 138 m. 58 lo. 952 c.
R. A. Anderson, *Gen. Supt*........Atlanta, Ga.
A. B. Bostwick, *Asst. Supt*........Atlanta, Ga.
John H. Flynn, *M. M. & C. B*.....Atlanta, Ga.
Wheeling, Pittsburg & Baltimore R. R. (*See B. & O.*)
Wheeling & Lake Erie R. R. 267 m. 31 lo. 1,456 c.
M. D. Woodford, *Gen. Man*........Toledo, O.
O. P. Dunbar, *Gen. M. M*........Norwalk, O.
John Hillhouse, *Div. M. M*........Norwalk, O.
A. Galloway, *Div. M. M*........Cambridge, O.
Whitby, Port Perry & Lindsay Ry. (*See Mid. of Can.*)
White Water R. R. (*See Ft. W., Cin. & Lou.*)
Whitefield & Jefferson R. R. (*See Bos., Con. & Mon.*)
Whitneyville & Machiasport R. R. 8 m. 2 lo. 48 c.
C. Sullivan, *G. M. & Pur. Agt.* Whitneyville, Me.
Wicomico & Pocomoke R. R. 4-8½ g. 30 m. 2 lo. 38 c.
L. Showell, *Pres*........Berlin, Md.
Williamsport & North Branch R. R.
4-8½ g. 6 m. 1 lo. 2 cars.
B. G. Welch, *Man. & P. Agt*..Hughesville, Pa.
J. V. Chamberlain, *Supt. & M. M.* do.
Williamstown R. R. 4-8½ g. 9 m. 1 lo. 10 cars.
Samuel Garwood, *Supt*..Williamstown, N. J.
Wilmington, Columbia & Augusta R. R. (*See W. & W.*)
Wilmington & No'n R. R. 4-8¾ g. 85 m. 16 lo. 148 c.
J. H. Thompson, *Supt. & P. A.*.Coatesville, Pa.
George Rommel, *M. M*........Coatesville, Pa.
Alex. Maitland, *M. C. B*........Coatesville, Pa.
Wilmington & Weldon; Northeastern; S. C. Central; Cheraw & Darlington; Cheraw & Salisbury; and Wilmington, Columbia & Augusta R. Rs.
5 g. 599 miles 70 locomotives 1,120 cars.
R. R. Bridgers, *Gen. Man*....Wilmington, N. C.
J. F. Divine, *Gen. Supt*........Wilmington, N. C.
John Bisset, *M. M*........Wilmington, N. C.
W. H. Day, *M. C. B*........Florence, S. C.
C. R. Clowe, *M. C. B.* (W. & W.). Wilmington, N. C.
Winifrede R. R. 4-9 g. 5 m. 1 lo. 65 cars.
Theodore Wright, *Pres*........Philadelphia, Pa.
Windsor & Annapolis Ry. 4-8½ g. 130 m. 10 lo. 160 c.
P. Innes, *Gen. Man*........Kentville, N. S.
Wm. Yould, *M. M*........Kentville, N. S.
Wm. Grierson, *M. C. B*........Kentville, N. S.
Wisconsin Central R. R. 4-8½ g. 480 m. 59 lo. 1,661 c.
F. N. Finney, *Gen. Man*........Milwaukee, Wis.
E. K. Howes, *Pur. Agt*........Milwaukee, Wis.
W. A. Short, *Supt. M. P. & M*...Stevens Pt., Wis.
Mil. & E'n Divs.: A. A. Allen, *S.*..Milwaukee, Wis.
Wisconsin, Iowa & Nebraska.
G. C. McMichael, *Supt*........Marshalltown, Ia.
Wis., Minn. & S. M. & N. Div.:
W. E. Carroll, *Supt*........Stevens Point, Wis.
Wisconsin & Michigan R. R. (*See Mil. & North'n.*)
Wisconsin & Minnesota R. R. (*See Wis. Cen.*)
Wood River Branch R. R. 4-8½ g. 6 m. 2 lo. 3 cars.
L. M. Barber, *Supt*........Hope Valley, R. I.
Woodstock R. R. 4-8½ g. 14 m. 1 lo. 3 cars.
J. G. Porter, *Supt*........Woodstock, Vt.
Worcester R. R. (Md.) (*See Del., Md. & Va.*)
Worcester & Nashua; and Nashua & Rochester R. Rs.
4-8½ g. 95 m. 20 lo. 523 cars.
C. S. Turner, *Pres. & G. Man.* Worcester, Mass.
G. W. Hurlburt, *Supt*........Worcester, Mass.
John G. Brady, *M. M. & C. B.* Worcester, Mass.
Worcester & Shrewsbury R. R. 3 g. 3 m. 3 lo. 9 c.
J. J. Coburn, *Supt*........Worcester, Mass.
G. E. Hapgood, *Pur. Agt*....Worcester, Mass.
Chas. Cleveland, *M. M*........Worcester, Mass.
Worcester & Somerset R. R. (*See N. Y., Phil. & Nor.*)

Y

York & Peach Bottom Ry 3 g. 40 m. 4 lo. 62 c.
S. M. Manifold, *Supt. & Pur. Agt*.....York, Pa.
S. J. Williams, *M. M*........York, Pa.
E. K. Williams, *M. C. B*........York, Pa.
Youghiogheny R. R. 4-9 g. 12 m.
Wm. Wilson, *Supt*........Irwin's, Pa.